MACHINERY ISSUE

THE IRON TRADE REVIEW

Single Copies 15 Cents | CLEVELAND, APRIL 4, 1918 | Four Dollars a Year

LAKEWOOD BUILT TO LAST

INDUSTRIAL HAULAGE

The Lakewood-Galion Tractor

Drives all Four—Steers all Four; double tractive power—permits shortest turns.

Operator merely changes seat to face going direction, safety first control, worm drive, enclosed running and driving mechanism.

Lakewood Tractors, Trucks and Trailers are efficient, labor-saving haulage equipment.

Complete Electric Haulage Systems

Link up with Lakewood

Lakewood Engineering Co., Cleveland

FACTORIES

LAKEWOOD GALION CHICAGO HEIGHTS WEST PARK MILWAUKEE ELYRIA

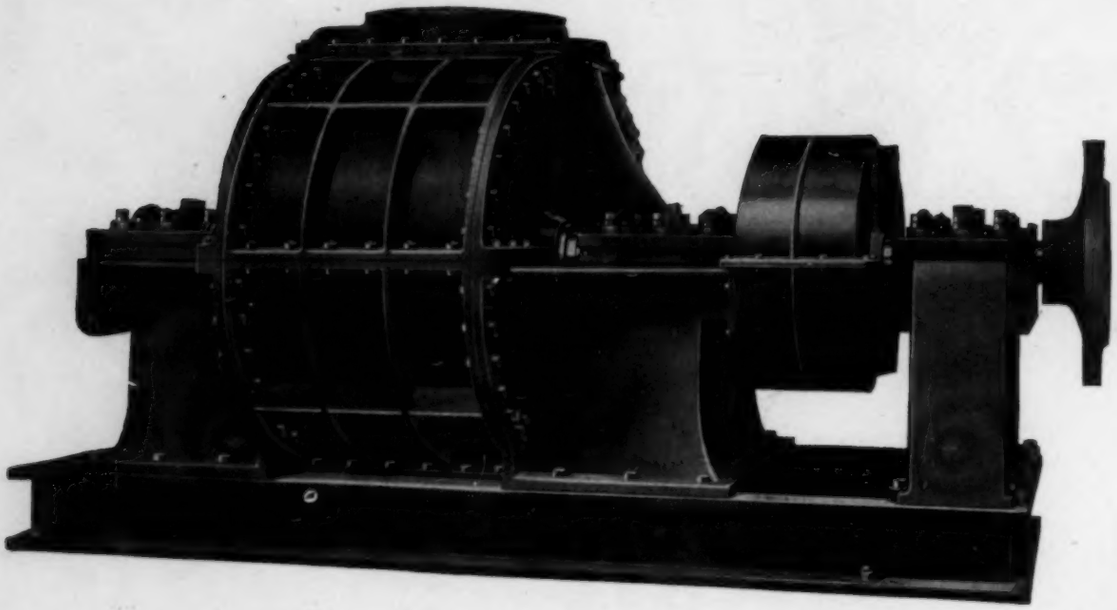
Sales outside of the United States and Canada handled exclusively by ALLIED CONSTRUCTION MACHINERY CORPORATION, New York, U.S.A.

ALLIED

APR 6 1918
UNIV. OF MICH.
LIBRARY

Advertisers' Index, pages 215-216-217. Contents, page 111. "Where-to-Buy," page 122.
Engineering Directory, pages 178-179. Classified Advertisements, pages 191-214.

"CONNERSVILLE"



Gas Pumps, Exhausters and Boosters

Throughout the By-Product Coke Fields of this country, **"Connersville"** and "superior service" are synonymous—whenever Gas Pumps, Exhausters and Boosters are being considered.

Connersville products are installed in every plant where efficiency, economy and durability are recognized as prime features in Gas Pump or Exhauster service.

Connersville Gas Pumps, Exhausters and Boosters range in capacity from 25 to 40,000 cu. ft. per minute, with a pressure range of from ½ to 10 pounds.

They can be used for handling gas, air, steam, etc.

Write for catalog

THE CONNERSVILLE BLOWER CO.

CHICAGO
929 Monadnock Bldg.

CONNERSVILLE, IND.

NEW YORK
114 Liberty Street

THE IRON TRADE REVIEW

Vol. LXII Cleveland, April 4, 1918 *No. 14*

Industry Speeds Up War Effort

Greater Co-ordination and Determination Mark Essential Production—Lake Interests Co-operate to Insure Full Ore Movement—Great Government Purchases Continue to be Made for Itself and Allies

GRIMER determination to fill promptly every demand upon it, is the answer of the iron and steel industry to the supreme German onslaught on the battlefields of France. A tightening of effort and more effective co-ordination in speeding up war production is apparent. The government continues to display a more vigorous attitude in following up deliveries of steel and in eliminating delays in the supplying of material which may obstruct essential lines of manufacture.

With the opening of lake navigation in sight, plans have been crystalized to smooth the way for a maximum ore movement during the present season. Co-ordination of the inter-related interests of ore and coal producers, of vessel owners and of the railroads is to be effected through committees and a superior administrative body representing all. A unified working arrangement was established at a general meeting in Cleveland Tuesday.

Car Orders Awarded

Extension of federal price regulation to include railroad supplies is expected in connection with the government's large purchase of this character about to be made. Bids have been taken from the builders on 100,000 freight cars of standardized type and on about 3000 locomotives. These are expected to be distributed in a few days. Buying of steel by the government in behalf of the allies is more in evidence. Large orders for ship plates and shapes have been placed for British delivery. A 60,000-ton inquiry for barb wire for Italy has been put out. Distribution of the several thousand aeroplane hangars for erection in France has been made. A large tonnage of structural steel as well as a huge number of turnbuckles are represented in these orders. Several large new inquiries for nuts and bolts have appeared. Steelmakers are in close touch with Washington pending the award of several million tons of shell steel which is expected within a short time.

Some controversy has arisen between buyers and sellers as to whether basic or foundry iron constitutes the base price under the revised schedule effective April 1. This point is of importance in connection with the differentials applying to other grades which are computed from the base price. The matter has been put up to the general committee of the American Iron and Steel institute for a ruling. Shortages of iron among steelmakers now are causing the government to make requisitions in behalf of these buyers. In the east a considerable tonnage of basic requirements has been provided for in this way. A heavy demand for iron persists in all districts but sellers have little to offer and the situation grows more tense as July 1 approaches. Inability of the furnaces to ship iron because of car shortages is regarded as a minor factor in the present famnie situation. In the Chicago district iron piled on furnace banks during the storm period has been cleared up and the unsatisfied needs are very large. Many producers are behind in deliveries not because of car shortages but because of loss of production.

Iron Output is Increased

While March showed a big gain in pig iron production over January and February, the figures for the completed first quarter strikingly display the slump compared with a similar period last year. The net loss of output for the three months of 1918 compared with the first quarter of 1917 is 1,131,403 tons. March's production of 3.212,715 tons represents an increase of 894,473 tons over February and 809,488 tons over January. The average daily production in March was 103,636 tons against 77,523 tons in January. The number of active stacks was raised from 319 to 340.

Scrap sellers who have held they are not obliged to reduce prices on shipments after April 1 against old orders, to accord with the new government schedule, apparently are on untenable ground. While this matter has not called for an official statement, the opinion has been expressed that scrap sales are not an exception to the rule of revision.

The Iron Trade Review

EDITORIAL

Prudent Lending is Imperative

SENATE and house conferees having finally agreed upon terms of the war finance bill, this measure probably will become a law shortly. The purpose of the bill is to aid the financing of essential war industries, but critics say that in effect it may finance nonessential industries. The bill creates a "capital issues committee" to consist of seven members, appointed by the President, with approval by the senate. This committee will pass judgment on all issues of securities for capital purposes, with a view to confining such issues to undertakings necessary to the conduct of the war. However, the bill distinctly specifies that the committee is not authorized to pass upon borrowing by any firm or individual "in the ordinary course of business". In other words, short-term borrowing through banks by nonessentials, it would seem, not only may proceed as usual, but with the War Finance Corp. taking care of the essentials, the banks would be better able to fill the money needs of the nonessentials.

But there is another way of looking at this situation. The money thus provided the nonessentials with greater facility would be expended in competition with the government and with vital industries, thus diverting labor and materials from war purposes. Also, this competition would hasten the advances in labor and prices, thus introducing inflation. In this connection, Governor Strong of the New York federal reserve bank last week sent a message to bankers which is extremely timely. He urged them voluntarily to curtail wasteful and unnecessary borrowing, to reduce loans for uses pertaining to luxuries and to conserve their surplus credit for the vital industries. In this way, as he points out, "we will be so ordering our affairs that we are not consuming the supplies at home which the armies need at the front". The passing of the war finance bill may relieve the banks of a part of the burden of financing essential industry, but it will not decrease their responsibility to the public in keeping money flowing through proper and useful channels.

Necessity Revives Old Methods

PREVIOUS to the enormous increase of manufacturing due to the European war, 90 per cent of the grinding wheels used in this country were made by what is technically termed the vitrified process. In this process the bonding material is a high grade of kaolin and its object is to hold the grains of abrasive material together. The process involved in making vitrified wheels is comparatively long because it is necessary to vitrify the wheels in a kiln to melt the bond and cause it to set. It takes three days to load a kiln and five days to burn it. Seven days are allowed for cooling and three days for unloading, so that the operation requires 18 days.

To reduce the manufacturing time of grinding wheels to a minimum, a number of grinding wheel manufacturers are filling rush orders in silicate bond. In this process, which was first introduced some thirty years ago, the bonding material is silicate of soda, or water glass as it is commonly called. In making grinding wheels by the silicate process the abrasive and bonding material in correct proportions is first thoroughly mixed and then rammed into molds by hand. A short baking completes the process.

By employing the silicate bond the grinding wheel consumer gets deliveries in the minimum amount of time. Urgent calls for quick deliveries rapidly are reviving this process and it is found that silicate wheels give entire satisfaction on many classes of work where vitrified wheels were heretofore used. By rejuvenating a manufacturing process of other days the war has served a useful purpose.

Teaching Safety to Furnacemen

ACCIDENTS at blast-furnace plants are not as easily prevented as they are at some other line of work. The melting process is intricate and requires a great deal of care. Each man has his duty to perform and when he fails to do it through ignorance or thoughtlessness, he often endangers the lives of other workmen. When you stop to think of the class of workmen that comes from southern Europe and generally seems so unpromising, it is surprising that more accidents do not occur. Some of these men after working about the furnace for a short period are capable of holding a more responsible position which is given to them when the opportunity presents itself. Disastrous accidents directly attributed to the fault of the furnace force are rare, which speaks well for the skill and carefulness of the men who comprise that force, drawn as they are from the "labor gang". It shows that such an organization can insure itself against and familiarize itself with the hazards of blast furnace work. That blast furnace work is dangerous is borne out by the majority of insurance companies. Some life insurance companies will not even consider such a risk.

In a bulletin "Occupational Hazards at Blast-Fur-

nace Plants and Accident Prevention" published by the bureau of mines it is stated that the majority of accidents cause a loss of time of less than 14 days. This means that the burden of financial loss falls chiefly upon the workman.

Practically every accident about a blast furnace is a repetition of a similar one at the same plants or other plants. A large proportion of these accidents can be avoided by the use of common sense, skill and prudence, provided the men are familiar with the causes of the accidents. Only a small per cent of the accidents may be attributed to the fault of the employer.

A Place for Labor Saving

AT THE recent March meeting of the American Society of Mechanical Engineers, the lack of proper equipment for the handling of package freight at the terminals in this country was strongly emphasized. It was pointed out that progress in the development of machinery for this work had been slow and that the use of the two-wheeled truck, as in years gone by, perhaps for the past 60 or 75 years, still was the rule in pier sheds and the warehouses. When freight was on ship or on track, it was asserted, mechanical power was applied liberally, but upon the arrival of the freight at the terminal, there the application ceased; it was the two-wheeled truck, propelled by a muscled unit from southern Europe, and in diminishing quantities, that was left to cope with continually increasing demands.

That the two-wheeled truck has maintained its position of importance all these years indicates its worth. The fact that it not only has served as a conveying unit, but as an ideal loading device, has made it one which engineers had great difficulty in improving upon.

With the situation as it is today and with the bitter experiences in shipping during the past winter, an incentive is presented which may carry for this line of development. Whether or not any marked advance can be made before the termination of the war, that alone time can tell, for the problem has numerous ramifications. It demands that not only attention be given to the development of mechanical equipment, but to the principals of terminal design and, perhaps, to the structure of railroad equipment But now that the subject again is up before the attention of American engineers, it is to be hoped that the work in this direction will be handled vigorously and will be in keeping with best traditions of American progress and ingenuity. The engineers, in this endeavor, may not afford any material aid in the prosecution of the war, yet they will be helping to meet a situation which is likely to develop with the coming of peace. Then embargo on common labor from Europe may go into effect and the present power behind the two-wheeled truck, perhaps for years to come, will be lacking.

A Puzzle for Clear Brains

GIVEN any group of men who handle any commodity necessitating cross-country transportation and it is certain that their conversation quickly will turn to the subject of railroads and freight. An unprecedented winter bringing unparalleled demands served only to accentuate a condition which is cumulative.

A jobber of structural material wished to rush steel 140 miles to complete some urgent government work. A permit was secured to obtain a car, a permit was then forthcoming to load the car and a third permit was procured to ship into embargoed territory. After that a 300-mile routing was necessary to get the car around a point known to be congested past all hope of extricating a shipment.

Refractories are known to be vital to steel production. The requirements of most large steel plants are protected by a reserve which is replenished by standing repeat orders with producers. During the winter months priority orders which were granted to these producers became a mockery, as no cars were forthcoming even at the most urgent calls. During February one maker could secure only 10 per cent of the cars asked to cover immediate crying needs. March saw an increased allotment to 30 per cent of the requested cars, but the depleted reserves of most refractories buyers were hopelessly behind.

These instances might be repeated indefinitely. They represent the general situation now—under favorable conditions for train operation, unhampered by the weather and extra winter traffic. It is true that existing congestion along lines converging at eastern ports is partially to blame. It is also granted that labor conditions and labor shortage at terminals and in railway shops may militate against effective operations in keeping the trains rolling. The whole question seems to display aspects of too much regulation. One good and substantial set of traffic brains seems badly needed.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 890

PIG IRON

Bessemer, valley	$35.20
Bessemer, Pittsburgh	36.15
Basic, Pittsburgh	32.95
Basic, eastern Pa.	32.00
Basic, Buffalo	32.00
Malleable, Pittsburgh	34.45
Malleable, Chicago	33.50
Malleable, Philadelphia	34.00 to 37.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $33 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus 50c.

2.75 to 3.25 silicon (No. 1X, No. 2, soft), base plus $1.50.

Over 3.25 silicon, $34.50, plus $1.00 for each ½ per cent of silicos.

No. 1X, Phila.	35.25 to 35.50
No. 2 foundry, Pittsburgh	33.95
No. 2 foundry, Cleveland	33.95
No. 2 foundry, Ironton	33.00
No. 1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.25 to 34.50
No. 2X foundry N. J. tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.50
No. 2 plain, Philadelphia	33.75 to 34.00
No. 2 plain, N. J. tide	33.75 to 34.00
No. 2 southern Birmingham	33.00 to 33.50
No. 2 southern, Cincinnati	36.40
No. 2 southern, Chicago	37.50
No. 2 southern, Phila. del.	38.30 to 39.40
No. 2 southern, Cleveland	37.50
No. 2 southern, Boston	39.50
No. 2 southern, St. Louis	35.90
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	36.77
Virginia, No. 2X, Jersey City	37.02
Virginia, No. 2X, Boston	37.27
Gray forge, Pittsburgh	32.95
Silveries, 8 per cent, furnace	46.00
Silveries, 8 per cent, Chicago	48.54
Low phos. standard, Phila.	55.00 to 56.00
Low phos., Lebanon furnace	50.00
Low phos., Pittsburgh	53.00
Charcoal, Superior, Chicago	37.50
Charcoal, Superior, Buffalo	39.75
Charcoal, southern furnace	43.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	7.00
Wise county furnace	6.00
Wise county foundry	7.00

FERROALLOYS

Ferromanganese, 80 per cent delivered	$275.00
Ferromanganese, 70 per cent delivered	250.00
Spiegel, 20 per cent fur.	70.00 to 72.50
Spiegel, contracts, furnace	70.00
Ferrocarbon titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, first quarter, Pittsburgh	180.00 to 190.00
Ferrosilicon, 50 per cent, Pitts., remainder of 1918	155.00
Bessemer ferrosilicon, 9 per cent.	$54.00
Bessemer, ferrosilicon, 10 per cent.	55.00
Bessemer ferrosilicon, 11 per cent.	58.30
Bessemer ferrosilicon, 12 per cent.	61.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	50.50
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.00

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pitts.	2.90c
Sheared skelp, Pitts.	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.185c
Structural shapes, N. Y.	3.195c
Structural shapes, Chgo.	3.00c
Tank plates, Chicago	3.25c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.435c
Tank plates, New York	3.445c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	2.90c
Bars, soft steel, New York	3.095c
Bars, soft steel, Phila.	3.085c
Bar iron, Chicago	3.50c
Bar iron, Phila.	3.50c to 3.685c
Bar iron, Cleveland	3.64c to 3.70c
Bar iron, New York	3.695c
Bar iron, Pittsburgh	3.50c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pbgh.	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	4.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, ¾ in. proof coil, Pitts.	8.00c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

Market Report Index

	Page
Weekly Market Review	829
Pig Iron	833
Coke	835
Semi-Finished Steel	837
Ferroalloys	838
Bars	838
Nuts, Bolts, and Rivets	838
Tin Plate	839
Rails and Track Materials	839
Scrap	836
Sheets	840
Structural Shapes	840
Wire	841
Merchant and Cast Iron Pipe	841
Plates	841
Nonferrous Markets	844
Coke By-Products	875
Machine Tools	878

SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.215c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.465c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.465c
No. 10, open-hearth, Phila.	4.435c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base Pittsburgh	Black (Per cent off)	Galv. (Per cent off)
¼ to 3 in., butt, steel	51	37½
¼ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

(Class B Pipe)

Four-inch, Chicago	57.30
Six-inch and over, Chicago	54.30
Four-inch, New York	58.35
Six-inch and over, N. Y.	55.35
Four-inch, Birmingham	52.00
Six-in. and over, Birmingham	49.00

HOOPS, BANDS, SHAFTING

Class A pipe is $1 higher than Class B.

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	2.90c
Shafting, Pitts., carloads	17 off to list

RIVETS

Structural rivets, Pittsburgh	4.65c
Boiler rivets, Pittsburgh	4.75c
Rivets ⅞ in. and smaller, Pitts.	45 and 10 off

NUTS AND BOLTS

(Delivered within 20-cent freight radius)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–5 off
Cut thread	40–10–5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–10–5 off
Cut thread	50–5 off
Larger and longer	40–10 off
Cold pressed semi finished hexagon nuts ⅜ in. and larger	60–10–10 off
Cold pressed semi finished hexagon nuts ⅞ in. and smaller	70–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products April 3, average for March, 1918, average for January, 1918, and average for April, 1917. Prices are those ruling in the largest percentage of sales at the dates named

	Prices April 3, 1918	Average prices March, 1918	Jan., 1918	April, 1917
Bessemer pig iron, Pittsburgh	$37.25	$37.25	$37.25	$42.20
Basic pig iron, Pittsburgh	33.95	33.95	33.95	39.20
*No. 2 Foundry pig iron, Pitts.	33.95	33.95	33.95	39.95
*No. 2, Foundry pig iron, Chi.	33.00	33.00	33.00	39.25
Lake Superior charcoal, Chicago	37.50	37.50	37.50	42.25
Malleable, valley	33.50	33.50	33.50	36.00
Malleable, Chicago	33.50	33.50	33.50	39.00
**Southern, No. 2, Birmingham	33.50	33.50	33.50	35.79
*Southern Ohio No. 2, Ironton	33.00	33.00	33.00	38.60
Basic, eastern Pa.	32.00	33.00	33.00	38.25
**No. 2X Virginia, furnace	33.50	33.50	33.50	38.25
**No. 2X foundry, Philadelphia	34.25	34.25	34.25	41.50
Ferromanganese, 70%, delivered	250.00	250.00	250.00	360.00
Bessemer billets, Pittsburgh	47.50	47.50	47.50	72.50
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	72.50
Open-hearth sheet bars, Pitts.	51.00	51.00	51.00	72.50
Open-hearth billets, Pitts.	47.50	47.50	47.50	72.50
Steel bars, Pittsburgh	2.90	2.90	2.90	3.38
Steel bars, Chicago	2.90	2.90	2.90	3.54
Iron bars, Philadelphia	3.50	3.50	3.648	3.659

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Prices April 3, 1918	Average prices March, 1918	Jan., 1918	April, 1917
Iron bars, Cleveland	3.64	3.64	3.64	3.25
Iron bars, Chicago mill	$3.50	$3.50	$3.50	$3.19
Beams, Chicago	3.00	3.00	3.00	3.79
Beams, Pittsburgh	3.00	3.00	3.00	3.70
Beams, Philadelphia	3.185	3.185	3.185	4.159
Tank plates, Pittsburgh	3.25	3.25	3.25	4.50
Tank plates, Chicago	3.25	3.25	3.25	4.69
Tank plates, Philadelphia	3.435	3.435	3.435	6.909
Sheets, blk., No. 28, Pitts.	5.00	5.00	5.00	5.75
Sheets, blue anld., No. 10, Pitts.	4.25	4.25	4.25	3.75
Sheets, galv., No. 28, Pitts.	6.25	6.25	6.25	3.75
Wire nails, Pittsburgh	3.50	3.50	3.50	3.20
Connellsville furnace coke	6.00	6.00	6.00	7.25
Connellsville foundry coke	7.00	7.00	7.00	7.87
Heavy melting steel, Pitts.	30.00	30.00	30.00	28.12
Heavy melting steel, eastern Pa.	28.75	29.50	29.80	25.15
Heavy melting steel, Chicago	29.00	30.00	29.70	26.63
No. 1 wrought, eastern Pa.	34.00	35.00	35.00	38.50
No. 1 wrought, Chicago	34.00	35.00	35.00	33.30
Rerolling rails, Chicago	34.00	35.00	35.30	31.90

(For Additional Prices See Page 890)

Question of Price Base in Dispute

Varied Interpretation Whether Basic or No. 2 Foundry Represents Base Figure Under New Reductions, Made by Producers and Consumers—Government Allots Basic Tonnage for Eastern Users—Unfilled Demands Huge

Pittsburgh, April 2.—Differences of opinion exist as to whether or not under the new price program the base level on pig iron has been changed. Prominent trade authorities themselves do not agree on this point and some consumers are contending that purchases they have made for second quarter should carry lower prices on all grades except No. 2 foundry and also on silveries and the lower grades of bessemer ferrosilicon. This contention is made under the assumption that the price on basic iron represented the base and that inasmuch as it has been reduced $1 a ton, a corresponding reduction should be made in the price of all other grades aside from bessemer, the new price of which is definitely fixed at $35.20, furnace and foundry iron, in which the price of No. 2 has been maintained by specific action at $33. The general committee on steel and steel products of the American Iron and Steel institute on Nov. 5 last in officially announcing the "schedule of pig iron differentials, said that "the base price of No. 2 foundry iron and also of basic iron was fixed at $33 per gross ton, f.o.b. cars, furnace." If basic is held to be the base level, then the $1 reduction would have to be made in other grades except No. 2 foundry and bessemer iron or the differentials become $1 greater. On the other hand, if No. 2 foundry is regarded as the base price, the only changes will relate to basic and bessemer. It is understood that the general committee of the institute is going to give an interpretation on this disputed point at once. In the meantime the prevailing opinion of the trade is that the only price changes made are in basic and in bessemer, though this view is hotly combated by some consumers. The matter has been called to the attention of the war industries board. No letup has developed in the demand for steelmaking grades, especially for basic, of which there is an acute shortage. Inquiries for bessemer are not so pressing and those for foundry have fallen off. There has been some trading through middlemen of basic for sheet bars, consumers of the latter paying the difference in the fixed prices. A valley consumer has come into the market for bessemer and is willing to take any amount that can be secured. The Trumbull Steel Co., Warren, O., is asking for 10,000 to 20,000 tons of basic iron for last half, and the Union Steel Casting Co., Pittsburgh, for 5000 to 7000 tons of bessemer. It is understood the Gould Coupler Co., Depew, N. Y., has been unable to cover its basic requirements. Some consumers who are urgently in need of tonnages have appealed to the war industries board. The regular sales averages by W. P. Snyder & Co., for March, show the fixed prices of $36.30 and $33, furnace, respectively, for bessemer and basic.

Strive Hard for Supplies

Boston, April 1.—A strong demand for iron for prompt delivery continues but with almost none available it is a big problem to satisfy demand. The chief effort of local agents and brokers has been to secure supplies for some of their customers who are badly off in the matter of supplies. No time, effort or expense has been spared in this effort and there are numerous cases where personal visits

have been made to the furnaces to get them to release supplies even at the expense of some other customers. There is little evidence, however, that the current inquiries in a majority of cases represent urgent needs; the New Haven road slapped on an embargo on inward freight on March 12 and on March 23, extended it to all its junction points, and the fear of delays in deliveries naturally makes melters rather anxious to be covered. One consumer has been looking for 1000 tons for May and June delivery for instance, which is merely made because there is a danger that 1500 tons contracted for will be held up long enough to create a scarcity. There are numerous such cases. But New England must look farther ahead in its forward bookings than other sections of the country owing to the uncertainties about winter deliveries and with the question of prices out of the way until July 1, it is expected that before long there will be more activity for last half. No Connellsville coke has been coming into New England and current business has gone largely to the local makers of by-product oven coke.

Second Half Foundry Sold

New York, April 1.—Many of the largest eastern consumers, as well as a great number of the smaller melters, have not yet closed for their pig iron requirements for second half, and due to the extent to which the furnaces are sold ahead, it is difficult to gather where their requirements will come from. It is estimated that the entire eastern production now is sold up to the end of the third quarter. Inquiries are coming out right along for good sized tonnages, but the furnaces as a rule, are paying no attention to these. Only in a few cases have second half tonnages been taken on during the past week. An eastern Pennsylvania maker, which previously had sold second half foundry on an extensive scale, has closed further tonnage for this position but since has withdrawn from the market. A Virginia furnace has opened its books and is offering some second half foundry and a western Pennsylvania producer also is selling limited tonnages of foundry for second half. Among the interesting transactions of the week were sales, aggregating a fair-sized total, of foundry iron by a southern furnace for immediate shipment to this district. The iron is to be shipped on special permit to consumers who need it for urgent government purposes. The General Electric Co. wants an indefinite tonnage of foundry for second half. Among numerous inquiries for second half foundry is one from the McNab & Harlan Mfg. Co., Paterson, N. J., for 1800 tons. A New York state melter is inquiring for indefinite tonnages of basic and malleable for second half. Leading Connecticut malleable interests recently have been sounding the market for a round tonnage of this grade.

Government Supplies Basic

Philadelphia, April 2.—Government regulation of pig iron distribution is becoming a market factor here. Numerous consumers on government work will receive tonnage by allocation of the director of steel supply which otherwise would go elsewhere or could not be delivered. To relieve shortage at one eastern mill government requisitioned 1000 tons of basic from a Schuylkill furnace and this was shipped immediately. The Lukens Steel Co., which has been suffering from shortage, has effected arrangement with the government whereby it will receive 5000 to 6000 tons of basic monthly from the south. Negotiations have been started for the requisitioning by the government from a New York state furnace of a large tonnage of standard low phosphorus iron for a large eastern consumer. This will supersede other bookings to large extent. Sales of the week include several thousand tons second half foundry iron for Pennsylvania railroad and several thousand tons copper-bearing low phosphorus iron for the last half. Other business comprised small tonnages of foundry and gray forge for quick delivery.

Shortage More Pronounced

Buffalo, April 2.—The scarcity of pig iron looms up from week to week now as the outstanding feature of the situation and this condition appears to be increasingly evident, rather than diminishingly so. Nothing more than the small lots which have constituted the only market of the past several weeks, is being disposed of. Producers have reached the stage where the taking on of extra commitments becomes hazardous in view of the uncertain coke supplies. One furnace not regarded as a merchant furnace, but which has been selling rather freely up till a month ago, now has retired from the market. It is sold up until the third quarter. Two of this interest's stacks are out. One will be blown in May 1 on basic which will be used by the producer's own steel mills while the other will be put in on the same date on ferromanganese. As events now shape themselves, it would not appear likely that there will be any large contracting by any district furnace for the next couple of months, unless the operating situation is improved. The demand keeps up strongly.

Expect Heavy Allocations

Cleveland, April 2.—Producers are anticipating that the government will be called upon to make heavy allocations of pig iron orders for delivery after July owing to the inability of many consumers to buy for that position in the open market. New allocations the past week have been small. The 1000 tons of foundry and 2000 tons of bessemer for Italy still are open. Consumers appear to be in a fairly comfortable position for the second quarter but there remains a large uncovered requirement for the last half which is the subject of a continuing heavy inquiry. Sellers are accepting practically nothing of this owing to their sold-up condition. The unfilled demand in steelmaking now is very large. A valley sheetmaker who has been seeking 15,000 tons of basic monthly has partially closed with a nearby maker. An Ohio river steelmaker again is inquiring for 30,000 tons for second, third and fourth quarter and another southern Ohio plant for 10,000 tons for third quarter.

Chicago Inquiry Persists

Chicago, April 2.—Though local makers of pig iron have been fully sold for their entire 1918 production for several weeks, inquiry continues to come out, not only from local melters but from a distance as well. The same condition seems to obtain in other producing centers as efforts by Chicago foundrymen to buy elsewhere have met with little success. One possibility remains in the fact that a merchant furnace at Milwaukee which has been out of blast for some time may become active during the last half and furnish some additional iron. This will not take place until July 1, and perhaps later, on account of the fuel situation. The principal producer in Chicago has taken a few contracts beyond its production with the understanding that they will be filled if conditions work out to make this possible. One inquiry just received is from the Andrews Steel Co., Newport, Ky., for 5000 to 10,000 tons of northern basic for second quarter and an equal tonnage for third quarter. An inquiry was received recently from a Buffalo consumer asking 15,000 tons of malleable. A round tonnage recently asked by a St. Louis basic user is not known to have been filled. Southern makers have not yet begun to offer iron freely for last half although indications are that

something will be done along this line. Embargoes preventing shipments to certain points have released some tonnage for spot selling which has relieved the situation somewhat.

Metal Can't be Had

Cincinnati, April 1.—The reduction of $1 a ton on basic will bring out no new business in this territory. Should basic producers in any district announce that they were able to take on more business this year, there would be a scramble on the part of consumers here to get under cover. The scarcity of metal now is of more consequence than the price fixed. The Ironton district has practically been cleaned up of all grades of iron with the exception of some foundry iron that will probably be offered later for last half shipment. As this tonnage will be so limited, the furnaces are hesitating about putting the metal on the market. Then, too, they also have to reckon with the possible contingency of having to shut down for repairs. Southern foundry iron is being sold in small tonnages for last half shipment, and a little off iron is to be had for the second quarter.

Sales at Lowest Ebb

St. Louis, March 30.—The past week has been marked by a continued heavy demand for pig iron from the district proper and from points logically well out of the zone normally supplied from this center. Against this is reported probably the smallest aggregate of actual sales noted since the beginning of the war. Merchant furnaces here are out of the market, being sold to capacity to the end of the year. Representatives of northern makers have received no further allotments for disposal, and the same is true of eastern producers. Customers are being informed the best possible arrangements will be made for them when there is anything to sell, but so far as could be gathered, no contracts to speak of were closed.

Furnace Companies Cautious

Birmingham, Ala., April 2.—While the revision of the pig iron prices by the government has been temporarily settled,southern furnace companies are preceeding cautiously. They are selling only in small lots and mainly to regular customers. There is but little if any iron obtainable from the probable make for the second quarter of the year. The sales being consummated are for last half delivery. Upward of 50 per cent of the probable make for the last half of the year has been sold. However, material increase in the make is looked for at least eight months of the year.

Coke Shipments Unstable

Car Supply Again Drops to Low Mark—By-Product Plants Instructed to Supply Local Foundry Trade

Pittsburgh, April 2.—The car supply in the Connellsville coke region is irregular. On the Monongahela railroad today the average was 70 per cent, yesterday it was 60 per cent and 30 per cent is promised for tomorrow. During the past week the supply fell off greatly and averaged only 30 per cent, the lowest it has been in a long period, comparing with 60 per cent for the preceding week, which was the greatest since last fall. It is the opinion that some loaded cars have been held at furnaces which had accumulated stocks and were unable to find additional space for piling. These supplies have been greatly reduced, however, and unless the improvement in the situation is made at once, it is likely that furnaces will again find themselves running extremely short of fuel. Efforts are being made to have virtually a full supply of cars within the next two weeks. There is practically no free coke being offered, and no new contracts are being made. Occasionally there are offerings of coke for shipment to restricted destinations. This has been especially true for delivery to points served by the Pittsburgh & Lake Erie railroad. Since the reduced level of $32 for basic iron became effective, coke contracts made on a sliding scale basis last fall for delivery during the second quarter will take lower levels. The contracts for the most part were made on bases of 5 to 1 and 4½ to 1 and under these the coke price for April, May and June delivery will be cut 20 to 22 cents per ton. The plan of the fuel administration to issue licenses to coke and coal jobbers which was to be effective April 1 has not been placed in effect. Applications for licenses have been made by jobbers and dealers and it is assumed that the plan will be started soon. Some dealers and jobbers are of the opinion that the licensing system will cause confusion. Production during the week ended March 23 totaled 339,580 tons as compared with 336,122 tons for the preceding week according to *Connellsville Courier.*

Further Sales in East

New York, April 1.—Some additional second half tonnage of foundry coke has been sold in this district during the past week by a western Pennsylvania beehive maker, who previously had closed numerous contracts for this position. This interest since has withdrawn, and no beehive coke now is being offered here. Additional sales of by-product foundry coke have been made by both New England and New Jersey producers.

Local Demand is Served

Cleveland, April 2.—Local consumers of foundry coke, under orders from the fuel administration, are drawing upon the by-product plant of the McKinney Steel Co. to the extent that the latter is able to supply this demand. The local blast furnaces of the American Steel & Wire Co. also are obtaining a portion of their supplies from the McKinney coke plants. The blast furnaces of the McKinney Steel Co. in western Pennsylvania are being served from the ovens of the H. C. Frick Coke Co. This arrangement is in keeping with the plan of the fuel administration to pool coke shipments in order to avoid long hauls and thereby effect a saving of cars.

Shipments Are Slow

Cincinnati, April 1.—Mild weather has brought out only spasmodic improvement in the coke situation. Shipments are being moved too slowly to destination according to the general complaint. No furnace coke is sold and very few foundry sales are on the books of different agencies.

Deliveries Move Up

St. Louis, March 30.—Consumers of coke in this district are complaining less on the score of deliveries from eastern ovens. An average of 50 per cent early in the month has been raised to close to 70 per cent. The favorable weather is loosening up congestion, and cars are more plentiful. Here, however, the betterment ends abruptly. It has been impossible to buy anything more than a few scattering cars for early shipment, and spot fuel is out of the question. Inquiries continue to deluge local dealers Southern producers are offering absolutely nothing. Smelters in the Missouri lead and zinc districts are hard pressed for supplies, and conditions in the southwestern states is hopeless. Fuel administration officials in the southwest have been exerting pressure here to obtain relief, but thus far have had but scant success. Production by by-product plants in this general region has picked up to some extent.

Pushing Commission Fight

Scrap Interests Circulate Petitions to Gain Support of Consumers—Shipment Prices Expected to be Reduced—Market Weakens

FOR COMPLETE SCRAP PRICES SEE PAGE 890

Philadelphia, April 2.—Scrap dealers and brokers are adopting more vigorous tactics in pushing their claims for a 3½ per cent commission on sales. They are circulating petitions for consumers' signatures which are to be presented to the price-fixing committee of the war industries board. Certain sellers who have taken the position that they were not obliged to revise prices downward on present shipments against sales which were made prior to April 1 are being advised that their position is contrary to the President's announcement of Dec. 28 last. This provided that all contracts entered after that date should contain a revision clause so that the price should be in accord with the official figure ruling at the time of delivery. The local market is weaker and new business is of moderate extent. Prices generally have been adjusted to the general reduction of $1 a ton in all grades.

Melting Attracts Attention

Buffalo, April 2.—Demand for iron and steel scrap is strong with offerings slightly heavier than they have been during the past week or 10 days. Several large railroad lists are now before the market and will be closed this week. They will, it is understood, go directly to the consumer. A picking up of sales was noticed especially for delivery within the district. The automatic effect of the reductions in steel scrap on the price schedule is to reduce the current prices on each grade. Considerable interest attaches to the meeting in Cleveland in the near future of the central division of the Association of Scrap Dealers with the western and eastern divisions. Local dealers believe that the decisions arrived at will touch matters of vital interest to the dealers. The existing price schedule will probably come in for a large share of attention.

Market is Softer

Pittsburgh, April 2.—Several grades of scrap show a softening and are being quoted below recent maximums. Sales of heavy melting steel have been made by producers in eastern Ohio to consumers at $28 and $28.50 f.o.b. consuming point as compared with the new government price of $29 on this grade. It is not believed, however, that dealers and brokers have shaded this quotation. Producers also have sold No. 1 cupola cast scrap, the maximum price for which now is $34, at between $32 and $34. The price of stove plate, which is not regulated, is easier, and this grade is quotable at $22. Transactions between dealers and consumers are almost entirely lacking. Supplies are reported to be somewhat more abundant, but not sufficient to meet the demands of this district, which consumes 44 per cent of the output of scrap in the country, but produces only 24 per cent. This situation gives a firmer tone to this market than is applicable to other consuming districts. The fact that prices are fixed on a delivered basis acts to the disadvantage of Pittsburgh consumers, it is claimed, because the natural tendency is for scrap to move to the nearest point of consumption. Suggestions are said to have been made to the price-fixing committee of the war industries board to change the price bases so it will be less difficult for Pittsburgh consumers to get supplies. It is also reported that the committee on iron and steel products of the American Iron and Steel institute is considering the idea of changing the classification of No. 1 cast and malleable scrap for cupola use and that the prices may be reduced slightly, perhaps 50 cents a ton. Dealers and brokers are anxiously waiting for an announcement on commissions.

Prices Generally Decline

New York, April 2.—The general reduction of $1 in all prices of scrap was the outstanding development in the old material market here during the past week. This, in conjunction with the general weakness of the market has resulted in a further decline in virtually all going prices. Dealers report trading as a whole as being dull and in addition are holding material until the market again shows some signs of strength. In fact, cast scrap appears to be the only description for which there is any particular demand. Prices in this instance are firm. Another grade which is holding up well is city wrought, but this is not due to demand but to the scarcity of this material. The other extreme is found in turnings.

Market is Weakened

Cincinnati, April 1.—Little confusion has resulted from the recent price changes that take effect today, but the action has tended to weaken the market. Dealers are not willing to accumulate any large amount of scrap, especially when the commission question still is unsolved. A great deal of scrap is being received at the yards that has to be sorted, which is only one item of expense that the dealers are put to in handling the material and for which no provision is made in the government prices. An improvement in shipments to Pittsburgh is reported one day and denied the next, because the railroad situation is one that the average shipper cannot understand. Freight embargoes are raised today and put on again tomorrow.

Conditions Are Stagnant

Cleveland, April 2.—Scrap iron and steel trading in this district is more inactive than last week, if that be possible. Announcement of the new prices without any enlightenment on the matter of commission has only served to make the market more stagnant. The country is reported well cleaned of scrap, while dealers have been out of the running so far as railroad material is concerned. Consequently, some of the most fruitful sources of supply have been eliminated. Yards of dealers here are pretty clean, too, and consumers have fairly good stocks on hand. Cleveland dealers are sanguine over the prospects of being granted a commission, and report consumers showing no hesitancy in signing petitions asking that this allowance be restored. Outside of the official $1 reduction, no price changes are reported inasmuch as trading has been nil. The only sale of importance in the past few days was one of $39 in low phosphorus scrap.

Adjust to New Prices

Boston, April 1.—The local scrap market has been somewhat upset by the announcement of the new government prices, but once the changes became clear to the trade, business went forward again in the usual channels. Practically all grades are affected by the new price schedules. Railroad embargoes are restricting the movement of scrap to consuming points outside of New England, and there was a report this morning that all eastern roads soon would establish a two-weeks' embargo. Cast scrap is not selling with much snap, but sellers are not inclined to sacrifice profits for the sake of business. Wholesale dealers' paying prices per gross ton, f.o.b. cars, shipping points, follow: Wrought No. 1 yard, $29 to $29.50; horseshoes, $29 to $29.50; cotton ties, $24; stove plate, $22; No. 1

machinery, $31; No. 2 machinery, $29; car axles, steel, $43; iron, $43 re-rolling rails, $30; bundled barrel hoops, $21; iron boiler plate, $34; wrought iron pipe, new specifications, $29; steel rails, $25.50; No. 1 railroad steel, $25.50 heavy melting steel, $25.50; axle turnings, $22; machine shop turnings, $15 to $15.50; cast borings, $15.50; drop forge trimmings, $24; cast iron car wheels, whole, $27, broken, $31.

Supplies Are Limited

St. Louis, March 30.—Despite the announcement of new official prices, there has been very little change in the market locally for scrap iron and steel. About the only reductions noted in dealers' lists are on grades which were selling at the maximum prior to the $1 cut. Dealers here think the threatened great scarcity of pig iron is the main argument in favor of firm scrap prices. A majority of the important consumers of melting steel are working on government contracts and have intimated they are not over-generously supplied with raw material. Dealers have been pushing the carriers on deliveries, and while some improvement is noted in this respect, there is still much left to be desired. Country receipts have been relatively light. While many consumers are willing to pay top prices for prompt delivery, dealers are unable to promise anything inside of 60 days. Considerable anxiety is expressed among dealers and brokers relative to commissions and other features of the new regulations. Railroad offerings this week were nil.

Chicago Market Quiet

Chicago, April 2.—Conditions in the scrap iron and steel market in Chicago continue quiet, the recent reduction on maximums of $1 having unsettled the market to some extent and buyers and sellers still are awaiting developments. No particular objection has been raised to the changes, and the market probably will resume its regular swing in a short time. Demand is not heavy on the part of most buyers and there seems to be an inclination on the part of holders of scrap not to offer too freely at present. The greatest point of scarcity seems to be in rerolling rails, which are almost absent from the market, and users of this form of scrap have difficulty in obtaining anything like their requirements. Railroads are offering comparatively little, the Chicago & Northwestern having just issued a list containing 4100 tons, of which 750 tons are steel rails and 500 tons No. 1 wrought.

Divert Steel to the East

Congestion of Certain Finishing Mills Lead to Increased Sales
Sheet Makers in Desperate Straits to Get Bars

Philadelphia, April 2.—Congestion at some finishing mills has enabled certain middle western producers to sell some semifinished steel in the east. One such sale involved 9000 tons of slabs; another 500 tons of slabs; a third several thousand tons of billets; and also a considerable tonnage of high carbon billets and slabs. The shortage of raw steel continues acute, however, due to the inability to get sheet bars despite the fact it is covered by contracts. The Bethlehem Steel Co. is rolling sheet bars both at Bethlehem and Sparrows Point. The N. & G. Taylor Co. is inquiring for several thousand tons of sheet bars. A Philadelphia district mill wants 2000 tons of billets for rerolling into large rounds. Numerous other inquiries are current.

Heavy Inquiries Continue

Pittsburgh, April 2.—Pressing and numerous inquiries are coming to makers and sellers of sheet bars in which there is an acute shortage. One small lot was sold in this district to a nearby consumer during the past week. Production now is estimated at about 90 per cent of capacity and it is possible that some light offerings may be made within a week or so, but they will fall greatly below the demand. Inquiries for slabs have fallen off. A platemaker in the east is understood to have bought 2000 tons in this market during the past week. Inquiries for forging billets and for discard steel are more numerous. The former are extremely scarce and the government price of $60, Pittsburgh, represents the minimum at which tonnages could be bought. The market for discard billets is firmer. While it recently was possible to buy 4 x 4-inch discards at $5 or $6 under the government price of $47.50, Pittsburgh, for regular billets, the level now appears to have moved up to about the price on soft billets. Some brokers are understood to have been able to get lots at $1 a ton under this figure. Small discard billets including sizes under 4 x 4 inches for rerolling also command the government price of $51, Pittsburgh, for soft steel, in most cases where quotations are being made.

Market is Quiet

Pittsburgh, April 2.—Activity that was expected by this time has not developed in the market for cold rolled strip steel. Makers of automobiles still have stocks on hand despite the fact that they have not taken any sizeable tonnages for several months. Their supplies, however, are reported to be almost depleted and it is believed they will come into the market soon. Makers have piled some stock and are able to make early delivery on requirements. The car supply has improved.

Consumers are Desperate

Cleveland, April 3.—Consumers of sheet bars in the northern Ohio district are well nigh desperate over the failure of their sources of supply to fill even old contracts. Some sheet mills cannot get shipments of first quarter delivery material, and producers declare there is no use to sell for second quarter when they are unable to complete first quarter contracts. Some Ohio sheet mills are operating at about 40 per cent of capacity, and managers are trying to wring bars from mills under every sort of pressure, but without avail. More attention is being given to the possibilities of using shell steel discard steel as a substitute for certain grades of sheets, but this change would entail such changes in mill practice and equipment as to cause mills to shrink from it at present. However, before the end of the year shell discard steel may become more of a market factor, say conservative sheet mill managers.

Full Operations

Shown by Open-Hearth Plants, But Bessemer Works Less Active

Youngstown, O., April 3.—Reports for the week ending March 30 show that in this and the Greater Pittsburgh districts, by-product coke ovens were operating at 93 per cent, a decrease of 1 per cent over the previous week; blast furnaces were operating at 92 per cent, the same as the week before; open-hearth at 98 per cent compared with 88 per cent one week earlier; and bessemer plants at 83 per cent, a decrease of 3 per cent over the previous week.

With all but one steel company reporting, there are 26,000 tons of steel piled in this city on account of embargoes and a shortage of cars. This company reported the previous week that 10,000 tons of steel were stocked. This would bring the aggregate to 36,000 tons as against 38,000 tons reported last week.

Bars Difficult to Place

Only Smaller Sizes Usually Offered in Open Market—Implement Trade Now is Well Covered for Future

Chicago, April 2.—Soft steel bars now under contract with western mills are sufficient to fill their schedules far in the future. Aside from recent contracting by agricultural implement makers to cover their necessities for the present year, practically nothing is being taken outside of government allotments. The agricultural implement business has gone principally to the leading interest, which has had most of this business in the past and all users are understood to have covered for their 1918 needs. Government allotments are fairly heavy, although not as much for bars as for plates and shapes. Railroads are not inquiring, awaiting action from Washington. Bar iron mills find conditions somewhat quieter, war requirements not now being so much in evidence, and most buying is moderate tonnages with specifications accompanying the order. In fact, almost all contracts now on books are for spot delivery, although a few contracts for wagon material have been taken covering first half requirements. When the government's order for railroad cars is placed, it is expected to call for considerable tonnages of bar iron. Mills rerolling hard steel bars from rails find more business presenting itself than can be accommodated. There is great scarcity of rails, railroads putting much less tonnage of this material on the market than usual. Mills are able to contract for only as much hard steel bars as they are able to cover by their rail purchases. Reinforced concrete users are not inquiring and most of the present demand is from manufacturers.

Small Sizes Only Obtainable

Philadelphia, April 2.—Steel bars continue hard to get except in the smaller sizes. The Donner Steel Co. has disposed of an additional tonnage in sizes up to 2 inches. Iron bars remain quiet. Large orders for bolts, spikes and rivets are being placed for shipyards. The American International Ship Corp. has distributed a good-sized bolt tonnage.

Fair Demand Shown

Pittsburgh, April 2.—Fair demand exists for steel bars and some of the independent mills are able to book considerable tonnages for delivery to implement manufacturers and other users, mostly for second and third quarter shipment. It is understood that some makers are actively soliciting business. Others are able to take care of their regular trade only owing to the sharp reduction in output which they had suffered up to recently and also on account of heavy government orders. The market for iron bars is active and a great deal of the tonnage is being made for the government.

Selling is Cut Down

Buffalo, April 2.—Instructions to discontinue further bar contracting, owing to the heavy government requirements have been issued to some steel mill representatives here. A local mill which is sold two months ahead on bars, still is contracting, but cautiously in order to be able to take care of any forthcoming government requirements.

Big Inquiries are Current

Chicago, April 2.—Inquiry for nuts and bolts has been much stimulated recently and during the past week one inquiry for 6,000,000 bolts and nuts was received in this district and yesterday another inquiry for 10,000,000 for the use of the government in France was received. Demand for turnbuckles is also on the increase, large numbers being used in the construction of airplane hangars, an inquiry within the last few days, involving 100,000 of these. In addition to this heavy government inquiry, there is a demand for the same material from other directions.

Operations are Improved

Pittsburgh, March 2.—Makers of nuts, bolts and rivets report that the car supply has improved greatly and operations are estimated at 75 per cent of capacity. Fair-sized orders are being received, most of them for the government, either directly or indirectly. Shipments on regular commercial requirements are being given in from 30 to 60 days, while on special business they are deferred from 90 to 120 days.

Wait for New Classification

Pittsburgh, April 2. — Makers of steel strip and hoop steel and bands are awaiting an announcement by the committee on iron and steel of the American Iron and Steel institute regarding the reclassification of those products so that they will take a single base proper differential. The price of 2.90c, Pittsburgh, for bands is not at all attractive and it is desired to remove them from the steel bar card. Fairly active demand exists for hoop steel, which is going to miscellaneous interests, but chiefly to makers of oil barrels.

Fair Demand is Made

Pittsburgh, April 2.—Demand for cold rolled shafting is fairly active. A considerable portion of the tonnages is being taken for the government, either directly or indirectly. The smaller sizes, such as 2-inch, are not being inquired for as freely as the larger diameters which are needed for the manufacture of munitions. Delivery on the former is being made in 60 days by some producers, while shipments on larger sizes are deferred from three to four months. Machinery interests are buying fair-sized lots, while demand from the screw stock trade is quiet.

Stronger Prices

Shown in Ferromanganese—Spiegel and Ferrocarbon Titanium

New York, April 1.—The subcommittee on ferroalloys of the American Iron and Steel institute held another meeting today to consider the proposal to reduce the number of units in standard ferromanganese and spiegeleisen, respectively, from 80 and 20 to 70 and 16. It is expected that an announcement on this matter will be made to the trade shortly by the subcommittee.

Inquiry for spiegeleisen is active, and it is estimated that some 4000 to 5000 tons now are wanted, mainly for second half. The market is strong at $70 for 16 per cent for any shipment.

Prices on ferromanganese have advanced. Asking prices now are no lower than $275, delivered, for 80 per cent metal, and $250 for 70 per cent. Sales of the week include 500 tons of English ferromanganese for delivery over April to August, inclusive.

Fifty per cent ferrosilicon for prompt shipment is being sold at somewhat lower prices than those prevailing of late, by interests who only recently began to produce this metal. Carloads for shipment within the next four to eight weeks are being sold at $170 to $180 per ton, delivered. On absolutely spot requirements it is believed that $190 could not be shaded. Contracts are going at all the way from $155 to $175, delivered, depending upon the buyer and seller. De-

mand, while rather quiet, is sufficient to prevent any accumulation of stocks.

Demand for ferrotungsten is somewhat quieter. The largest prospective transaction involves 300 tons for Italy, for which government officials at Washington, are negotiating. The market on 70 per cent ferrotungsten continues to be quoted at $2.25 to $2.30 per pound at the furnace.

Round advances were put into effect on ferrocarbon-titanium on April 1. The former price of $160 per net ton at makers' plant for carloads has been raised to $200, makers' plant. For lots between 1 ton and a carload, the new price is $220 per net ton, and for less than ton lots, $250 per net ton.

Sales Made on New Bases

Pittsburgh, April 2.—Sales of ferromanganese and spiegeleisen have been made in this district on the newly adopted bases. The standard for the former was reduced from 80 per cent to 70 per cent and that for the latter from 20 to 22 per cent to 16 to 18 per cent. The base prices on the old standards have been maintained on the new ones and 70 per cent ferromanganese is quoted at $250, delivered for spot and first half and 16 to 18 per cent spiegeleisen is at $70, furnace, both for spot and contract. Good sized inquiries are pending for ferromanganese. It is understood that the price per unit above 70 per cent has not been definitely decided upon, but that probably it will be $3.50 to $4, depending on the delivery, and that for spiegeleisen will be about the same. The Pittsburgh Crucible Steel Co. has taken 400 tons of 16 to 18 per cent spiegeleisen for April-May-June delivery at $70, furnace.

Snap Up Old Quotations

Cleveland, April 2.—Buyers of ferromanganese in this district who have had open recently quotations of $250, delivered, have been taking advantage of these in view of the market's advance. Probably 1000 tons for last half were closed in the week. The market is quoted at $275, delivered.

Ferro in Demand

Chicago, April 2.—Strong demand for ferromanganese has been experienced recently and considerable selling has been done. The local producer is said to be sold to about 75 per cent of last half production. The price has been $250 at the furnace but some selling has been done elsewhere at $275, delivered. With ore conditions uncertain, sellers are extremely careful in obligating themselves.

Await Great Car Award

Government Takes Bids on 100,000 Cars of Standardized Type and Many Locomotives—Rails Are Placed

New York, April 2.—Distribution of large orders for cars and locomotives in connection with the government's large program of railroad rebuilding is expected to take place this week. The railroad purchasing committee now is conferring in New York with supply men regarding the specialties for standardized rolling stock. Announcements of the car and locomotive orders are expected to follow this conference. According to the present outlook, 100,000 cars including 55-ton steel hopper, 70-ton high side steel gondola, 70-ton low side steel gondola, 40 and 50-ton box and 50-ton composite gondola cars will be ordered. This is in accordance with the standard specifications and plans which have been prepared and have been issued to the car builders during the past week. These specifications are reported to be of a broad character. Parts which are possible of interchange have been standardized.

The Chicago, Milwaukee & St. Paul has authorized the building of 5000 freight cars in its own shops. Since the Canadian government awarded 8000 cars, approximately 6000 of which went to the Canadian Car & Foundry Co., little business has been placed. Of the order the Eastern Car Co. received 750 flats and 650 coal cars, and the National Steel Co. 1000 box cars. The American Railway Corp. has awarded 40 hoppers to the Pressed Steel Car Co. New inquiries include 200 boxes and 200 flats for the Manila railway; 50 are for the Chile Exportation Co. and 100 tak cars for the Roxna Petroleum Co., Tusca, Okla.

The government has distributed orders for 5000 to 10,000 tons of rails. Many railway inquiries are current from street railway and industrial companies. These are being booked at from $60 to $80 per ton. The Philadelphia Rapid Transit Co. is seeking 1000 tons of rails and 300 kegs of spikes.

Withdraw from Market

Pittsburgh, April 2.—Jobbers still are seeking small spikes, but a number of makers in this district have committed themselves fully and have withdrawn from the market. Deliveries are deferred from four to five months on business which was last taken. Numerous small lots of standard railroad spikes are being sold and the time of shipments promised ranges from four to eight weeks. No inquiries of importance are being made for standard rails and probably will not be until the government comes into the market for a large tonnage, as it is expected to do soon, in connection with its railroad upbuilding program. Most makers are fully committed for the remainder of the current year and are unwilling to quote on 1919 business, but are holding themselves in readiness to take care of government requirements.

Await Car Buying

Chicago, April 2.—Railroad cars are not being inquired for nor bought, all railroads waiting the result of the government's proposed buying, which at first was figured at 150,000 cars, later reported at 45,000 cars and now is said to involve 60,000 cars. It has been rumored that this order may be placed during the present week, and probably will be distributed among various builders throughout the country.

Standard steel rails are being sold only in small tonnages to piece out the requirements of various roads which already had covered their principal requirements for 1918. Delivery of rails on existing contracts is slow as mills find need for their raw steel for other purposes. Light rails are active and are being sold in considerable tonnage, about 25 per cent of present contracts being for export purposes.

Car Shortage

Greatly Felt in Tin Plate and Some Plants Suspend

Pittsburgh, April 2.—Shortage of cars caused a reduction in operations of tin plate mills during the past week, some of them having had to suspend entirely. Production continues, however, at a good rate of capacity and it is believed that a better car supply will be available at once. Shipments are moving without interruption and considerable has been accomplished in the way of reducing large stocks which had been piled in warehouses. It is understood that the food administration is exerting every effort possible to improve operations and shipments so as to assure a sufficient supply of tin plate for containers of perishable foods.

Many Hangars Awarded

Large Orders for France Finally Distributed by Government —England is Important Buyer of Ship Shapes

New York, April 1.—Negotiations are being conducted by government authorities at Washington for the purchase of a large tonnage of plain structural shapes for the British government, for early shipment. Many other export inquiries for shapes are out, but are receiving no attention due to the export embargo. Ordinary domestic demand for plain shapes has fallen off considerably. However, to such an extent have government requirements grown of late that the mills which recently were offering shapes for delivery in two or three months now can take practically no tonnage for shipment in less than four to five months. An interesting project which has been revised is the extension to the Culver Rapid Transit line, Brooklyn, which originally came up several months ago. Bids on 3600 tons for this work are requested. Considerable progress has been made in letting the contracts for airplane hangars, of which it originally was expected to build 2500, for the use of the American expeditionary forces in France. It is understood that 900 to 1000 of these buildings, each involving 35 to 40 tons, have been let.

A Hangar Steel is Awarded

Pittsburgh, April 2.—The government is reported to have distributed steel for 2500 airplane hangars for France, involving approximately 100,000 tons. These awards had been held up because of a change made in designs. Fabricators in this district are reported to have received a considerable portion of the business. One local fabricator has put out an inquiry for 20,000 turnbuckles for hangars. It is said that this number of turnbuckles is required for 500 shelters which will require 1000 tons of angles. An inquiry is out by a nearby mill for 2,500,000 1¾ x 1¾ x 3/16-inch angles for supports for barbed wire entanglements for France. About 2750 tons of steel are involved. Structural awards being made by the government involve large tonnages and it is estimated that 85 per cent of the operations of mills in this district is devoted to government requirements. The domestic market is extremely dull.

Western Building Slack

Chicago, April 2.—Were it not for the constant requirements of shipbuilders, for whom material is placed by the government, the market for steel shapes would be extremely slack. Aside from the allotments by the government for shipping, comparatively little is coming into the market as building operations are at a minimum.

CONTRACTS AWARDED

Shaft sets, bearers, and stuttles, for Norrie Aurora mine, Oliver Mining Co., Ironwood, Mich., 223 tons, to American Bridge Co.

Deck plate and through plate girder spans for the Minneapolis, St. Paul and Sault Ste. Marie Railway Co., Palisade, Minn., and Waukesha, Wis., 112 tons to independent shop.

Structural steel for conveyor supports, for crushing plant, Utah Copper Co., Magna, Utah, 100 tons, to Kansas City Structural Steel Co.

Ninety-five buildings to be erected for Atlantic Loading Co. in New Jersey, 1500 tons to independent fabricators.

Crating shop for quartermaster general's department, 900 tons to Bethlehem Steel Bridge Corp.

Crane runway for Henry R. Worthington, Inc., Harrison, N. J., 450 tons to Austin Co.

Airplane hangars for American Expeditionary forces in France, 35 to 40 tons each, contracts let for 900 to 1000, including 120 to McClintic-Marshall Co., 120 to L. F. Shoemaker & Co., and 120 to Belmont Iron Works; 1500 to 1600 still pending.

Power house at Thamesville, Conn., 300 tons, to Berlin Construction Co.

Trestle for the Upson Nut Co., Cleveland, 220 tons to independent fabricator.

CONTRACTS PENDING

Breaker for Delaware, Lackawanna & Western railroad, 900 tons, bids being taken.

Culver Rapid Transit Line, section 3, Route 49, Brooklyn, 3600 tons. Bids to be opened April 15.

Viaduct for Southern Railroad, 350 tons, bids being taken.

United States Assay Office, New York, plans being drawn for new building.

Colored Men's Y. M. C. A. building, 179 East 135th street, New York, 300 to 400 tons, bids being taken.

Bascule bridge for the Boston & Albany railroad, 1000 tons, bids being taken.

Output Loss Due to Cars

Shortage of Box Cars Seriously Affects Sheet Mill Operations —Close Tonnages for Portable Camp Stoves

Youngstown, O., April 3.—All sheet mills in this territory are operating at reduced output owing to the shortage of box cars. The leading producer states only one box car was delivered to his sheet mills in one week and that last month the scarcity of cars was so pronounced, the mills were idle 190 eight-hour turns. As a result large tonnages of sheets are being piled in the mill warehouses and when this space is exhausted the plants will be shut down. Salesmanagers say that incoming eastern shipments of material loaded in box cars show a decided improvement but unless these cars are loaded with westbound or government material they cannot be used. Sheet makers do not expect any improvement in eastern shipments until the war is ended on account of the heavy government traffic in this direction. Most mills are already heavily stocked with eastern export sheets upon which shipping permits have been refused. Inquiry continues heavy but sales are few since in addition to being sold up for several months, makers are behind on deliveries.

Want Steel for Stoves

Cleveland, April 2.—Manufacturers who received orders for large numbers of portable stoves for cantonments are covering for their sheet requirements which run to considerable tonnage. One northern Ohio stove maker who received a portion of this order has closed for his black sheet needs involving 18,000 to 20,000 sheets but still was in the market this week for approximately 35,000 blue annealed of No. 14 gage and for 13,000 galvanized sheets. Buyers find it difficult to obtain quotations from sheet makers for any reasonably nearby delivery.

Tonnage is Allocated

Pittsburgh, April 2.—Most of the tonnage of No. 22 corrugated sheets required for hangars for the American army in France has been allocated. The amount of tonnage for this purpose is extremely heavy and is said to exceed 50,000 tons. Operations of sheet mills in this district are proceeding at a low rate and are not greater than 60 per cent of capacity.

Taking Tentative Orders

Philadelphia, April 2.—An eastern maker of sheets now is taking blue annealed business for June delivery with the understanding that the government requirements come first. Government orders recently distributed represent a large tonnage in the aggregate.

Place Plates for British

Government Orders Ship Steel From Eastern Mills for Ally—More Stringent Control Exercised Over Distribution

Philadelphia, April 2.—Large tonnages of ship plates have been placed by the government with mills in the east and elsewhere for shipment to England. These take precedence over all other business. The government during the week placed still further restrictions on the business plate mills may book. They may now accept orders only when accompanied by priority certificates. The Pennsylvania railroad has placed 6000 tons of plates with several mills. All eastern plate mills now have enough urgent business to take them well into the fourth quarter.

Heavy Bookings Made

Pittsburgh, April 2.—Platemakers in this district have taken heavy bookings during the past week, a good portion of the tonnage being for the Emergency Fleet corporation. There are no offerings of sizes in the open market such as are used by the government, although it is understood there has been limited lots of other sizes sold to commercial buyers. Mills are understood to be well committed for the first half and after that period large tonnages again will be placed by the United States government both for itself and the allies. England is in need of an unusually large quantity of plates for that delivery. Car builders are holding a conference in Washington with government authorities regarding the plans for the production of a large number of cars, details of which have been announced heretofore The Pressed Steel Car Co. has taken 95 coke cars for the Semet-Solvay Co.

Follow Orders Closely

Youngstown, O., April 3.—A platemaker in this district whose mill has been idle for about 10 days was notified by government officials to ship all emergency fleet plates to the various shipyards specified and to transfer the remaining unrolled tonnage to another maker. This is illustrative of the close way in which the government is following up plate orders. About a year ago this mill was closed down for over a week on account of the shearmen striking for higher wages which were eventually granted. In order to prevent the reoccurrence of this, the officials ordered a spare shear. This was stored in the mill yard. Recently the shearmen again struck for higher wages. The mill was then shut down and preparations made for the installation of the shear.

War Tonnage is Heavy

Cleveland, April 2.—Local plate makers continue to devote a large proportion of their capacity to war work, principally plates for shipbuilding. The entire output of one plant is being drawn in that direction and from 85 to 90 per cent of the production of another. A new war order received in the local district the past week calls for 2500 tons of light plates for the manufacture of depth bombs. These are to be shipped to a western point and were allocated on a Chicago base price. Some universal plates still may be had from eastern mills at 3.33c, mill, for shipment at mill convenience.

Heavy Tonnage is Offered

Chicago, April 2.—Government allotments of ship material, principally plates, containue to come to western mills, but nothing of an important nature has been allotted here recently. Most of the material is in small tonnages, both for fabricating shops and for shipyard use, but these are in such numbers that the aggregate is large. One lot of 70,000 tons of plates on which prompt delivery was required was offered here recently, but it was not possible for local mills to handle it and it went elsewhere.

Lap Weld Demand

Shows Continuing Increase—War Buying of Cast Pipe Delayed

Pitsburgh, April 2.—Demand for iron and steel lap weld pipe which has been consistently active for some time in increasing and comes principally from oil country interests. The leading interest is not taking any new business, while some of the independent mills have fallen behind in deliveries and cannot make shipments on sizeable lots under three months. They also have reached the point where they are confining sales to their regular trade. Improved demand comes from jobbers for iron and steel butt weld sizes and where it was the practice to make prompt delivery up to recently, the best shipment now afforded is one month except where assorted shipments are wanted these can be made promptly.

Buying is Held Up

New York, April 2.—Considerable new business is being held up in the eastern cast iron pipe market, pending action by congress on appropriations for certain projects the government expects to get under way shortly. At present, demand generally is dull, there not even being the inquiry from private consumers, which has prevailed of late. Little is being done in the way of export buying and municipal inquiry continues at a standstill.

Western Cities Slow

Chicago, April 2.—Demand for cast iron pipe is slow to come out, although the season is becoming advanced, and all tonnages are small. The only inquiry of any importance at present is Springfield, Ill., where figures were to be opened April 1 on 1700 tons. The Central Foundry Co. has taken 90 tons at Manitowoc, Wis., at $54.55 per ton for universal pipe. The United States Cast Iron Pipe & Foundry Co. has been awarded 142 tons at Niagara, Wis.

Largest Inquiry

For Barb Wire Issued for Italy—Nail Bids Accepted

Pittsburgh, April 2.—The Jones & Laughlin Steel Co. and the Pittsburgh Steel Co. each has been awarded 10,000 kegs of nails by the war department and it is reported that the remaining 10,000 of the 30,000-keg lot on which bids were opened last Tuesday went to the United States Steel Products Co. All three of these companies together with the Youngstown Sheet & Tube Co., put in a bid of $3.50 per 100 pounds, the price recommended by the committee on iron and steel products of the American Iron and Steel institute. These nails are to be shipped to France. Nails are in active demand and makers who have been soliciting business have become so heavily booked that they no longer are doing so. Bids for 40,000 kegs of nails were opened today by the bureau of supplies and accounts, navy department. The government is putting out an inquiry for 60,000 tons of barbed wire for Italy to be delivered within six months. This is said to be the largest single inquiry for barbed wire that has come before makers of the United States since the war began. Considerable inquiry also is being made for barbed wire for agricultural interests in the northwest and tonnages taken for this purpose involve sizable lots.

Ore to Move Under Central Control

Consumers and Shippers of Lake Superior Ore Approve Plan for Unified Direction of Trade This Year—Coal and Ore Interests Will Co-operate With Vessel and Railroad Men

LAKE Superior iron ore in its progress from the northern mines to consuming points along the lower lakes and in the east, is to be handled this year under a plan of centralized control. The ore trade will be directed as one element in a general plan which provides for the unified direction of the iron ore, coal, vessel and railroad interests involved in Great Lakes trade.

Unanimous approval was voiced at a meeting in Cleveland April 2 attended by representatives of a majority of the iron ore consumers. On April 3 the vessel operators of the Great Lakes pledged their support to the mobilization plan which is a part of the general scheme of complete co-ordination. The railroad and coal interests are heartily in support of the plan.

What the Plan Is

As worked out at the present time, the plan provides for an administration committee of four members which will include one representative each of the iron ore and coal trades and of the vessels and railroads. These interests in turn will be represented by their own individual committees. The iron ore committee, for instance, will be the subcommittee of the American Iron and Steel institute which has been handling iron ore, pig iron and lake transportation. The vessels will be represented by a vessel committee representative of the shipping board. The coal committee will represent the fuel administration and the railroad committee will represent the regional director of railroads in eastern territory.

The administration committee in turn will function through the newly organized ore and coal exchange. Each of the four trades will be represented by operating committees working in direct co-operation with the ore and coal exchange. The ore operating committee will handle the details of cargo loading, unloading and distribution. The coal operating committee will handle cargo allotment, and loading and unloading problems. The vessel operating committee will look after vessel distribution and supply, and the operating committee of the railroads will supervise the car supply and car movement.

H. G. Dalton, of Pickands, Mather & Co., chairman of the institute committee, presided at the meeting on April 2. He outlined the plan for co-ordinating the four industries and emphasized the vital importance as a war measure of using as sparingly as possible railroad facilities during the next year. "The railroad situation is the weak link," said Mr. Dalton. "The vessel capacity for handling the iron ore is ample and the unloading facilities at lower lake ports and in furnace yards is sufficient."

In directly addressing the ore consumers, Mr. Dalton asked each to place their estimated requirements at the lowest figure consistent with full operation. "Do not ask for more than you need," said Mr. Dalton. "Do not ask for your ore first. We want to close the year with each consumer having a full supply and no more, so that the tax upon the railroads will have been distributed as fairly and as lightly as possible."

Harry Coulby, president of the Pittsburgh Steamship Co. and chairman of the mobilization committee which will direct lake vessels during the year, emphasized the importance of conserving railroad facilities. He pointed out that last year's experience in directing lake trade had resulted temporarily in some inconvenience for individual interests but that the net result had been that at the present time each consumer had on hand a sufficient amount of ore to meet his requirements, that ample coal had been carried to the northwest and that all the grain offered for transportation had been moved before the close of the season.

Matthew Andrews of M. A. Hanna & Co. urged that estimated requirements be placed at the lowest figure and pointed out that the cutting off of 100,000 tons from the estimates of each of 10 different firms would release 1,000,000 tons in transportation capacity. This would decrease the burden upon the railroads so that they could carry more coal.

What Ore Committee Wants to Know

Ore in furnace yard, April 1, 1918.

Ore on Lake Erie docks, April 1, 1918.

Estimated amount wanted direct during season 1918.

Estimated amount wanted docked at Lake Erie ports during season 1918.

Total amount to be brought down by vessel in 1918, *including any deferred purchases.*

First, second and third choice routes over which you prefer to have ore shipped.

Average unloading capacity per day, of 24 *hours, number of cars.*

Kind of unloading equipment.

How Ore Committee Will Work

E. C. Collins of the Pittsburgh Steamship Co., chairman of the ore operating committee, outlined briefly the plan under which this committee will work. Regular daily meeting will be held at which the problems of properly handling the ore movement will be considered. He urged each consumer to have a representative in Cleveland who would be thoroughly cognizant of conditions at his plant so that the committee could work at all times with an exact knowledge of the situation at each consuming point.

The administration committee will be made up of Harry Coulby, president of the Pittsburgh Steamship Co., representing the vessels; Matthew Andrews of M. A. Hanna & Co., representing the ore interests; A. A. Augustus of the Cambridge Collieries Co., representing the coal interests; and George L. Peck, representing the railroads. The vessel committee includes Harry Coulby; C. L. Hutchinson of Hutchinson & Co.; J. S. Ashley of M. A. Hanna & Co.; C. D. Dyer of the Shenango Steamship Co.; and H. S. Wilkinson of the Great Lakes Steamship Co. The coal committee includes A. A. Augustus; Horace Robbins of the Youghiogheny & Ohio Coal Co.; George Cameron of Pickands, Mather & Co.; and H. E. Booth of M. A. Hanna & Co.

The ore committee includes the members of the American Iron and Steel institute's subcommittee on pig iron, iron ore and lake transportation. The ore operating committee is headed by E. C. Collins, vice president of the Pittsburgh Steamship Co., chairman; George H. Warner of M. A. Hanna & Co.; and A. E. R. Schneider of the Cleveland-Cliffs Iron Co.

Pig Iron Production Jumps Upward

Output in March Was Highest Since Last November But First Quarter Production Slumps 12.5 Per Cent From Last Year's Record —More Stacks Now Active

PRODUCTION of pig iron in March approached normal. The output was the highest of any month since November, the daily average production going over the 100,000-ton mark for the first time this year.

Complete first quarter production figures reveal clearly, however, the extent of the decrease this year, when compared with the first three months of 1917. The tonnage made in the past quarter was 7,934,184 tons, against 9,065,587 tons in the same period last year. The loss of 1,131,403 tons amounts to 12.5 per cent.

The actual output of coke and anthracite pig iron last month was 3,212,715 tons, compared with 2,318,242 tons in February, a gain of 894,473 tons. The average daily production showed an increase from 82,794 tons in February to 103,636 tons in March. The increase of 20,842 tons amounts to more than 25 per cent. The biggest gains were made in the northern states, which were hit hardest in the recent slump. Pennsylvania's output jumped 360,000 tons, Ohio's increased 209,000 tons, while Illinois, which produced only 158,000 tons in February, showed a gain alone of 133,000 tons last month.

MONTHLY PRODUCTION

	1918	1917	1916
January ...	2,403,227	3,159,839	3,171,878
February ...	2,318,242	2,649,935	3,078,548
March	3,212,715	3,255,813	3,327,630
Total 3 mos.	7,934,184	9,065,587	9,578,056
April	.....	3,328,061	3,225,496
May	.....	3,413,677	3,364,584
June	.....	3,260,234	3,213,818
Total 1st half.	.....	19,067,559	19,381,954
July	.....	3,337,442	3,221,127
August	.....	3,238,970	3,197,838
September .	.....	3,140,742	3,208,041
October	.....	3,296.286	3,508,180
November ..	.....	3,198,597	3,317,805
December ..	.....	2,885,380	3,184,178
Total 2d half	.....	19,097,417	19,637,169
Grand total	7,934,184	38,164,976	39,019,123

AVERAGE DAILY PRODUCTION

	1918	1917	1916	1915	1914
Jan.	77,523	101,930	102,319	51,323	60,624
Feb.	82,794	94,641	106,157	59,521	67,450
Mar.	103,636	105,026	107,343	66,009	75,534
Apr.	.....	110,936	107,517	70,484	75,383
May	.....	110,119	108,535	72,747	67,646
June	.....	108,675	107,127	78,998	63,486
July	.....	107,659	103,907	82,687	63,075
Aug.	.....	104,483	103,156	89,510	64,403
Sept.	.....	104,691	106,935	94,478	62,757
Oct.	.....	106,332	113,167	100,656	57,007
Nov.	.....	106,620	110,593	101,174	50,042
Dec.	.....	93,077	102,715	103,278	48,236
Av'ge	88,158	104,562	106,610	81,022	62,934

Steel works or nonmerchant furnaces produced 2,337,859 tons in March against 1,640,278 tons in February, a gain of 697,581 tons. The output of merchant iron in March was 826,777 tons compared with 649,159 tons in February, an increase of 177,618 tons. The average daily production of the steel works furnaces increased 16,834 tons or from 58,581 tons in February to 75,415 tons in March. The average daily production of the merchant furnaces in March was 26,670 tons against 23,184 tons in February, a gain of 3486 tons.

More furnaces are now active, 339 stacks being in blast on March 31, compared with 320 on the last day of February. Three new furnaces were lighted during the month, one by the Lackawanna Steel Co., at Buffalo, one by the Indiana Steel Co., at Gary, Ind., and one by the Iroquois Iron Co., at Chicago.

Speigel production in March was 13,965 tons compared with 10,649 tons in February, a gain of 3316 tons. The ferro output last month was 34,114 tons against 18,156 tons in February, a gain of 15,958 tons.

MARCH PIG IRON

States	No. of stacks.	No. in blast last day of month. Mar.	Feb.	Total tonnage made. Merchant.	Non-Merchant.	—Totals— Mar.	Feb.
Pennsylvania	160	128	117	222,800	1,023,929	1,246,729	880,893
Ohio	79	69	64	168,013	548,924	716,937	507,158
Alabama	47	31	32	129,506	96,425	225,931	207,575
Virginia	21	14	14	46,795	.....	46,795	40,914
New York	28	20	19	68,789	107,372	176,161	153,184
New Jersey	6	3	4	15,489	.....	15.489	15,033
Illinois	25	23	20	63,427	226,965	290,392	157,844
Colorado	6	4	4				
Indiana	15	15	13	22,901	284,495	307,396	204,313
Maryland	4	3	3				
Wisconsin	6	3	3				
Kentucky	7	4	4				
West Virginia	4	3	3	52,868	24,971	77,839	68,318
Tennessee	17	11	11				
Washington	1	1	1				
Georgia	2	0	0				
Texas	3	0	0				
Minnesota	3	3	3	36,189	24,778	60,967	54,205
Michigan	3	3	3				
Missouri	1	1	1				
Spiegel—All states...						13,965	10,649
Ferro—All states....						34,114	18,156
Total	438	339	319	826,777	2,337,859	3,212,715	2,318,242

Fuse Makers Co-ordinate Their War Efforts

The first formal meeting of the American Fuse Manufacturers' association was held in Cleveland, April 2 and 3, when problems of design and construction were discussed. The purpose of the association is to coordinate the efforts of the manufacturers of shell-firing mechanism. Committees on design and on loading work out difficulties which arise and present them to meetings which represent over 90 per cent of the fuse manufacturers of the country. Technical discussion in open meeting results in the solution of the greater part of the difficulties which arise and the small remaining differences are submitted to the production division of the war department. The result is a great saving of time and effort both to the government and to the manufacturers. It is the intention to hold these technical meetings frequently in different munition centers. G. T. Trundle, chief engineer of the American Multigraph Co., is president of the association, and R. K. Blanchard, chief engineer of the Neptune Meter Co., New York, is treasurer.

Resigns as Manager

Charles B. Bohn, who for approximately four years has been Detroit works manager of the Aluminum Castings Co., Cleveland, has presented his resignation to take effect about April 15. It is reported that Mr. Bohn will organize a company to operate his own plant.

The Colonial Iron Co., about the end of April, will blow out its furnace at Riddlesburg, Pa., for relining.

One of the seven furnaces of the Lackawanna Steel Co., Buffalo, will be put on ferromanganese.

Business in War

To be Discussed at United States Chamber of Commerce Meeting

What business can do in the second year of the war will be the theme of the addresses to be made by the many speakers of national prominence at the sixth annual meeting of the United States chamber of commerce, at the Auditorium in Chicago, April 10, 11 and 12. Representatives of more than 1000 commercial organizations whose combined membership exceeds 500,000 business executives will be in attendance. On Wednesday representatives of the government having practical knowledge of the subjects will discuss the government's attitude toward railroads, shipping, finance and general control of business. Thursday the same subjects will be discussed by business men, who will present their side of the case. Friday will be devoted to formulating and passing resolutions resulting from previous consideration. Tuesday will be devoted to committee reports. Wednesday morning the meeting will formally commence with an address of welcome by Lucius Teter, president of the Chicago association of commerce. R. G. Rhett, president of the United States chamber of commerce, will sound the convention's keynote.

In the afternoon, government officials will outline the government's position in connection with war matters. Edward N. Hurley, chairman of the United States shipping board, will give the facts about shipping. The national chamber's activities in relation to the foregoing will be presented in 10-minute addresses by Waddill Catchings, chairman of the national chamber's war service committee; E. A. Filene, chairman of the national chamber's war shipping committee; Harry A. Wheeler, chairman of the committee on railroads; Wallace D. Simmons, chairman of the committee on war finance.

Group sessions for discussion of matters suggested on Wednesday will be held Thursday. Mr. Catchings will preside when the first group discusses government organization in relation to business in war. His address will be followed by one by George N. Peek, industrial representative of the war industries board on "How Shall We Keep Industry Going and Carry on the War", and by others. Charles A. Hinsch, president of the American Bankers' association, will lead the group discussion on finance, which will be divided between trade acceptances and the effect of government financing on industry. Among those to discuss trade acceptances will be Wallace D. Simmons, president of the Simmons Hardware Co.

All Prices of Scrap Are Affected Says Gary

To clear up confusion with regard to iron and steel scrap prices to prevail over the second quarter, Chairman E. H. Gary of the committee of steel and steel products of the American Iron and Steel institute, issued the following statement on March 28:

Referring to the statement authorized by the council of national defense, under date of March 26, that "the President today approved the recommendation of the price fixing committee of the war industries board, that the maximum prices heretofore fixed by the President upon the recommendation of the board, upon ore, coke, steel and steel products, subject to revision on April 1, 1918, be continued in effect until July 1, 1918; from April 1 to July 1, however, the maximum price of basic pig iron be reduced from $33 to $32 per gross ton, and that the maximum price of scrap steel be reduced from $30 to $29 per gross ton"; it should be explained that it is the understanding of this committee that the reduction of $1 per gross ton is made on all prices of scrap, both base grades and differentials; the effect being to reduce by $1 per gross ton all prices shown in the differentials recommended by this committee under date of February 21, 1918.

Chairman Gary, in commenting individually on the new price schedule for the second quarter, said:

"The prices approved and announced by the President were those which were recommended by the general committee of the American Iron and Steel institute after consultation with representatives of the different lines. For some of the manufacturers they are very low in view of the increased and increasing cost of production. However, all are disposed to devote their capacity to the interest of the government. A majority of the producers will realize a fair profit on the average.

"Prices on steelmaking pig iron were reduced $1 per ton because it was believed these products could reasonably afford a reduction but more particularly because the reductions would be of considerable benefit to the makers of finished products who are compelled to buy their melting materials.

The Non-Ferrous Metals

Copper Lead Spelter Tin

New York, April 2.—With the big German drive still in progress, incentive has been lacking on the part of many large consumers to buy heavily of metals. Trading in the metal markets was duller last week than at any other time this year, although this year has been thus far unusually dull. Also, the Easter holidays caused a partial suspension of business, with many brokers and dealers absent for a few days' vacation.

The downward drive in spelter seemed to have been checked at the level of 7c, but was weaker again today at the lowest price in three years. This movement is believed to have been due largely to the activities of various small smelting interests, who have given up hopes of a revival in the market and are preparing to close; consequently they are offering their stocks at almost any price to dispose of them. The trouble with the prime western spelter market is that the metal is not being consumed. The galvanizing trade normally takes above 65 per cent of the output of prime western, yet now it is only taking about 30 per cent of its normal requirements. The brass trade, which takes a large part of the remaining production in normal years, is also operating at a low rate so far as general business goes, most of the brass business now going being for direct and indirect government work. The government is furnishing brass mills high grade spelter at the fixed price of 12c, St. Louis. Prime western spelter may be quoted 6.95c to 7c, St. Louis, for prompt, April, May and June shipment.

The lead market also has eased off slightly, business being generally quiet. Outside sellers are shading the American Smelting & Refining Co. price of 7.25c, New York, for shipment from the west, as low as 7c, New York, being heard. The market may be quoted 7c, New York, for prompt, April, and May shipment.

The tin situation is unchanged. Considerable interest is being shown in the efforts of the food administration and the war industries board to solve the problem of supplying essential industries with tin. There are practically no spot supplies available of any grade. Such odd lots of 99 per cent tin as appear are quoted about 85c to 86c, New York. There has been some buying of Chinese No. 1 for April shipment from China at about 78.50c, c. i. f. New York.

Distribution of copper proceeds smoothly at 23.50c for carloads and 24.67½c for less than carloads. The supply of copper appears ample to meet requirements.

Practically the entire output of virgin aluminum is going to the government at the fixed price of 32c for 98 to 99 per cent. Remelters of scrap are not satisfied with scrap prices and say some arrangement must be made whereby they can obtain supplies of old aluminum at a lower price in order to sell at the government price.

No business in antimony has been reported transacted the past week. The market for Chinese and Japanese brands, for spot delivery is about 12.75c to 13c, duty paid, New York.

The Salvaging of High-Speed Steel

A Few Practical Methods for Conserving This Valuable Material

FIG. 1—A FORMED CUTTER GRINDER

THE superintendent glanced at the order the purchasing agent placed before him. Then he reread it carefully. It called for several thousand transmission gears of a new type.

He telephoned for Roberts the toolroom foreman, who appeared a few moments later.

"Roberts," the superintendent began in his usual brusque manner, "here is a good-sized rush order we'll have to get out in a hurry. Look it over and tell me what you think of it."

Roberts read the order carefully. "We can get these gears out all right," he replied. "We'll have to make up some box tools."

"All right," the superintendent rejoined; "here's your specifications, so it's up to you to get busy."

"How about getting me some high-speed steel?" Roberts asked.

"Can't get any for love or money," the superintendent replied. "Hunt around and see what you can find—ought to be some odds and ends kicking around somewhere. Dig 'em up."

As Roberts left the office he did a little thinking. He recalled that in the cellar under the toolroom were about 50 tons of scrap steel of all kinds—odds and ends that had been accumulating for the last 15 years.

Superintendent is Surprised

He went into the cellar where he stayed until 4 o'clock that afternoon. He was so occupied with his investigation that he forgot to eat lunch. The result of his search he had transferred to the toolroom. Then he stepped into the superintendent's office.

"Well, Roberts, what's on your mind?"

"You know we wanted some high-speed steel. Well, I wish you'd come to the toolroom a moment. I've got a surprise for you."

A moment later both men entered the toolroom. The first thing that attracted the superintendent's eye was a neat pile of high-speed steel, mostly squares one inch and smaller.

"You don't mean to tell me," he exclaimed, "that all the steel in that pile is high-speed. How much is there?"

"'Over a ton," Roberts replied. "I went down cellar with a portable electric grinder and spark-tested all the short ends—that's the result."

"Well, well," the superintendent rejoined, as he rubbed his hands enthusiastically, "who would have believed it? These seem to be worn-out lathe and screw-machine tools that found their way into the scrap heap some years ago when the price of high-speed steel didn't bother us as it does now. Roberts, you've done well. That pile stands us in quite a neat little sum.

"By the way, Roberts, there's another point I want to caution you about. Be careful that even the little pieces of high-speed steel scrap do not find their way into the tool-steel scrap."

"Are those little pieces like worn-out bitts out of tool holders any good?" Roberts asked.

"They certainly are," the superintendent replied. "A process has recently been developed whereby these small pieces can be remelted and cast into ingots of any convenient size."

"In other words," Roberts volunteered, "we can send in a few hundred pounds of scrap we can't use, such as short bitts, worn-out reamers, drill stubs, etc., and get a specific number of pieces of any size we want."

"That's it exactly. You've got the idea. It's an excellent method of conserving our high-speed steel supply and its merits should not be undervalued."

* * *

Roberts' experience suggests only one way of conserving high-speed steel. There are several other ways to cut down the consumption of this semiprecious metal. For instance, solid forged high-speed steel tools may be supplanted by combination tools with ordinary steel shanks. These may be turned out either by brazing or by oxy-acetylene or electric welding.

The demand for the solid tool of other days is still in evidence. To meet this demand numerous experiments have been tried for the purpose of perfecting a built-up tool that, for all practical purposes, is as efficient as a solid one. Briefly described, tools of this type consist of a shank made of low carbon steel to which is fastened a bit of high-speed steel.

Must be Fitted Carefully

In Fig. 9 is shown inserted bitt tools in which the metal is cut away at one end for inserting a high-speed cutting bitt. The bitt can be held in position through the employment of either brazing or oxy-acetylene welding. If the bitt is to be brazed in place, it is first fitted carefully, and then wired, as shown in Fig. 10, and sent to the blacksmith shop for brazing.

Only bitts made of air-hardening steel can be brazed in place. Otherwise the excessive heat necessary to harden some brands of high-speed steel would cause the spelter to become molten and run out of the joint. After the tool is brazed and air-hardened it is ground to the desired shape.

To fasten the bitts in place by the oxy-acetylene welding process requires a somewhat longer procedure than the one just described, but it is produc-

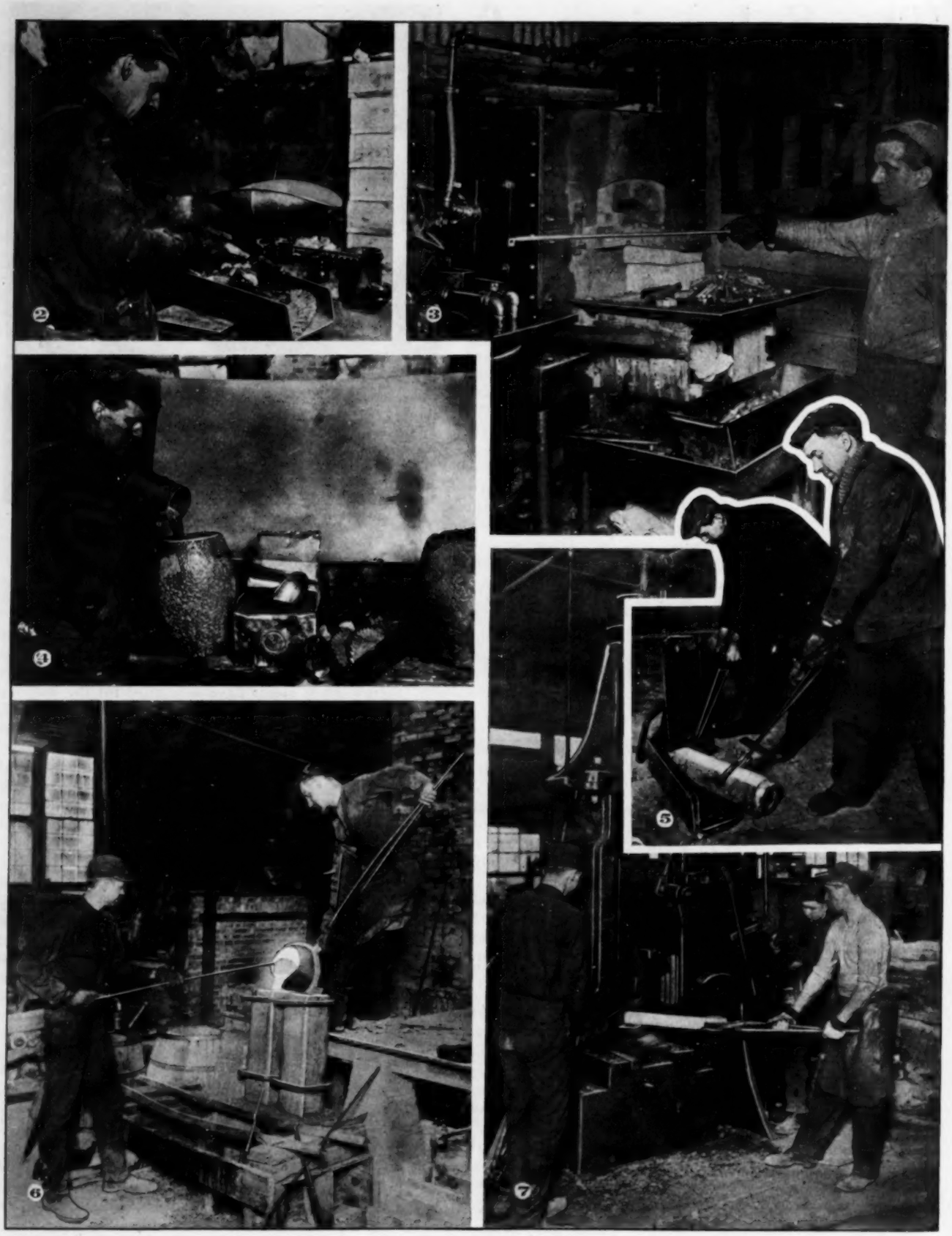


FIG. 2—WEIGHING SCRAP STEEL. FIG. 3—VIEW IN THE HARDENING ROOM. FIG. 4—ADDING TUNGSTEN TO THE CRUCIBLE CHARGE. FIG. 5—REMOVING AN INGOT FROM A MOLD. FIG. 6—CASTING INGOTS. FIG. 7—ROUGH FORGING INGOTS

tive of good results. The first step is to rough-machine the shank as shown in Fig. 15. After the bitt is placed in position, as shown in Fig. 12, a trough or channel is formed all around it. This is filled with the molten metal used in the welding operation. In welding the bitt in place, the two pieces should be firmly clamped together by means of an ordinary C-clamp. It is not practicable to wire the bitt in position since the excessive heat necessary to melt the welding material would also fuse the wire. After welding, the tool can be ground to any shape desired.

Electrically Welded Tools

Another good method of making two-piece tools is to electric butt-weld them. With an electric welding machine the operation is very simple. All that is necessary is to fasten the stock for the shank and the piece for the bitt in the clamps of the welder and proceed as in any other butt-welding operation. The finished welded piece shown in Fig. 11 is ready for grinding and hardening.

In selecting material for the shanks of the tools, a variety of opinion is found as to what material is the most efficient. Cold-rolled steel is cheap, but owing to its softness is soon forced out of shape by the action of the tool-post screw. Ordinary 0.30 per cent carbon steel is harder but where tools for severe service are desired, a low grade of tool steel is preferred as this material will withstand hard usage.

High-speed steel may also be reclaimed by recutting milling cutters. Take as an example the ordinary milling cutters used so plentifully in any machine shop. After these have been ground and reground, they should not be consigned to the scrap heap as it is an easy matter for any toolmaker to recut them without annealing.

The process is comparatively new, but has been widely adopted. The first technical articles explaining the recutting of milling cutters without annealing were published about six years ago. The worn-out cutter, as shown at *A*, Fig. 13, is first gashed all around by means of a thin abrasive wheel, the work being held in an ordinary cutter grinder. The next step is to grind away the superfluous metal between the gashes with another wheel, the face of which has been trued to the correct angle. This is shown in Fig. 14. Upon first trial, the operator will burn a few cutters, but a little practice will make him proficient. In Fig. 16 two cutters are shown. Cutter *A* has been gashed out only, while *B* shows the finished cutter ready to be put into service again. The side teeth can be recut in the same way. However, since the side teeth of milling cutters are seldom ground, they do not require recutting.

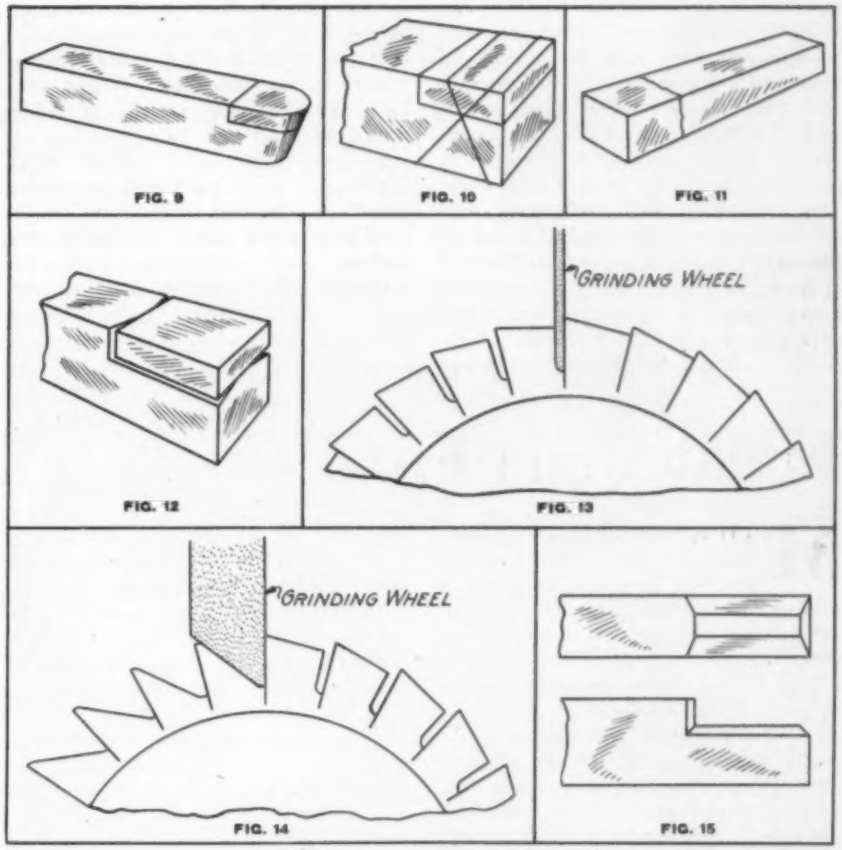


FIG. 9—A BUILT-UP TOOL. FIG. 10—BITT WIRED IN PLACE FOR BRAZING. FIG. 11—ELECTRIC BUTT-WELDED TOOL. FIG. 12—BITT IN POSITION FOR WELDING. FIGS. 13 AND 14—PROCESS USED IN RECUTTING A MILLING CUTTER. FIG. 15—TOOL SHANK MACHINED FOR BITT

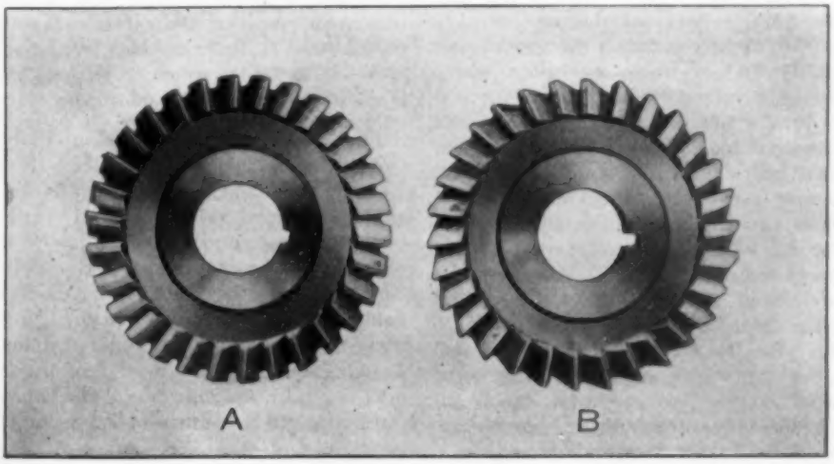


FIG. 16—STEPS TAKEN IN RECUTTING A MILLING CUTTER

The Field for Formed Cutters

Formed cutters are expensive tools, especially when made of high-speed steel. Therefore to use them as economically as possible they should be properly sharpened with the teeth pointing exactly to the center. One of the best ways to accomplish this is to sharpen them on a machine especially adapted for the purpose. Formed cutters are often sharpened by hand in order to save the small amount of time necessary to set up the cutter-grinding machine. This is an unnecessary waste of high-speed steel, as such cutters usually do not work properly and eventually have to be reground correctly.

A typical formed cutter grinding

machine is illustrated in Fig. 1. The work is held on an arbor between centers and the cutter is indexed by means of a worm gear. The operator sets the face of the grinding wheel central with the spindle of the index centers before placing the cutter in position, thus assuring accurate work.

When high-speed steel first came into general use, it was subjected to exhaustive experiments which resulted in its being used in many places where today, owing to its high price, it can be replaced with carbon steel. High-speed steel can be used to advantage in all cases where heavy roughing cuts are to be taken either on cast iron or steel, on the lathe, planer, miller, boring mill, etc. Where very light finishing cuts are to be taken, many manufacturers have found it advantageous to use carbon steel. Again, on such materials as brass, aluminum, die-cast metal, etc., it is now considered good practice to use carbon steel altogether, both for roughing and finishing cuts. Certain kinds of tools that require a keen cutting edge also are preferably made of carbon steel. In this category may be included woodworking tools of all kinds, scrapers for metal work, hand tools such as files, pieces subject to wear such as jig bushings, cutting tools of the nature of punches, dies, etc. Many hand tools such as reamers and taps give efficient results when made of carbon steel. In the case of drills, it is a good plan to use high-speed steel for cast iron and steel, while carbon steel answers for the softer metals. The small drills, known to the trade as number drills, are generally supplied in carbon steel for all purposes in the metal working trades.

Peat Beds Furnish Huge Fuel Reserve

MUCH information and descriptive matter in general has been circulated from a number of sources during the last several years devoted to the peat deposits of the United States.

The United States geological survey in particular has been urging the commercial development of these vast deposits of fuel as one of the practical methods of alleviating the present fuel shortage. Although peat has never been extensively used as fuel in this country because of the abundant supply of coal, which can more readily be prepared for consumption, and in normal times more cheaply brought to the consumer, it has long been used in Europe, where 15,000,000 to 20,000,000 tons are consumed annually in generating heat and power.

The attempts made in this country to manufacture peat fuel on a commercial scale have not been successful, but the failure appears to have been due not to a lack of market for the product but to the lack of sufficient capital, to the inexperience of the operators, and to preventable engineering errors. It is said that air-dried machine peat, which is but little inferior in calorific value to many grades of lignite coal, can be produced at a cost ranging from $0.75 to $2.50 a ton, the exact figure depending on the size and the efficiency of the plant; and it is believed that in some parts of the country it could successfully compete with other fuels for both domestic and industrial use. It burns with little smoke and ash.

Recommend Investigation of Peat

The wide interest felt in the larger use of peat in the United States is expressed in recent messages from the governors of Maine and Massachusetts to the legislatures of those states, recommending an investigation of the local deposits of peat and its possible use to relieve the present shortage of fuel.

The lack of other fuel in many European countries is now being supplied in part by an increased use of peat. According to United States commerce reports, 216 peat machines were in operation in Norway in 1917, compared with 55 in 1916 and 36 in 1914. Among these were two automatic machines, each costing $13,400, having a daily capacity of 30 to 40 tons of fuel, and requiring only two men for operation.

Peat consumed in a properly designed gas producer yields gas of good quality and in abundant quantity in comparison with the yield from coal, as well as many valuable by-products. This is perhaps the most effective utilization of peat fuel for generating heat and power because peat used in this way does not need to be so carefully prepared nor so thoroughly dried as peat designed for consumption under steam boilers.

Specific information with regard to the use of peat in gas-producing plants and for other purposes is given in bulletin 16 of the bureau of mines.

Nature and Distribution of Deposits

Peat is a dark-brown or black residuum produced by the partial decomposition of mosses, sedges, and other vegetable matter in marshes and like wet places. Most of the peat deposits of this country occur in depressions and poorly drained areas in regions where the temperature of the air and the soil is low in summer, and the humidity of the air is high. The most extensive peat beds are found in New England and around the Great Lakes, where the climate and the topography are favorable to the accumulation of partly decomposed vegetable matter. Many deposits are found also in the Atlantic coastal plain, from New Jersey southward to Florida. In regions of heavy rainfall along the Pacific coast peat bogs occur wherever the drainage is so greatly interrupted that the soil becomes permanently saturated with water.

The second annual report of the public utilities commission of Maine contains descriptions of many peat bogs in that state. Detailed information relating to the occurrence of this material in Maine and a map showing the location of workable deposits in that state can also be found in United States geological survey bulletin 376.

It is estimated that more than 11,000 square miles of swamp land in the United States contain peat beds of good quality, and that the total available fuel in these deposits would amount to more than 12,000,000,000 tons, a quantity that could furnish heat and power for the entire country for many years. Much of this material exists in states that have no known deposits of coal and which, on account of their cold climate and manufacturing industries, consume large quantities of fuel, a constantly increasing percentage of which must be conveyed by rail and water from distant mines. According to a recent estimate made by Prof. E. K. Soper in a paper on the peat deposits of Minnesota, published by the Minnesota geological survey, more than 6,000,000,000 tons of air-dried peat fuel can be obtained from deposits in that state alone. The utilization of these deposits would greatly augment the local fuel supply and would incidentally relieve the strain on our transportation facilities by furnishing fuel to an area where coal is now brought by the longest haul.

The American Sheet & Tin Plate Co. has issued a booklet entitled "For Your Own Advertising", which is designed to be of value to metal workers, stamping concerns, shop owners, contractors, roofers, hardware supply concerns and others in the sheet metal field. The booklet is printed on glazed paper and carries illustrations showing the standard brands of products made by the company. The booklet also gives a number of suggestions and hints on the preparation of advertising matter for the trade.

Control of Manipulators

A Description of Side Guards and Lifting Fingers for Handling Blooms—Functions, Mechanical Layout and Operation Are Considered

BY J. D. WRIGHT

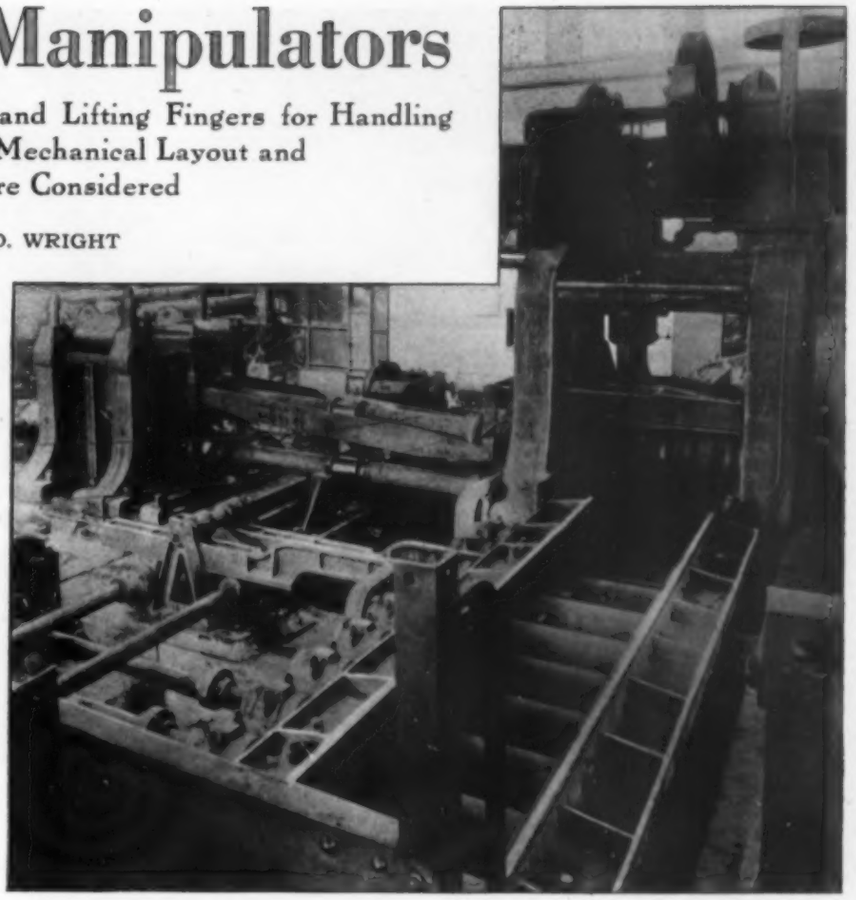


FIG. 1—BLOOMING MILL FROM ENTERING SIDE—LIFTING FINGERS MAY BE SEEN BETWEEN THE ROLLS

USUALLY the first questions which one asks when considering the proper type of motor and control for any steel mill auxiliary machine, are, "What is its function; what is the mechanical layout, and how does the device operate?" Without a thorough knowledge of the answers to these questions it is impossible to make an intelligent recommendation on the application of motors or control.

Discussing standardization of motors and control at a meeting of the Association of Iron and Steel Electrical Engineers in Pittsburgh about a year ago, E. Friedlaender, of the Carnegie Steel Co. said, "What we need is more papers descriptive of installations and operation of our mills. In such a way we would gradually get uniform ideas about general requirements at all our mills and thereby drift toward a stable system of standardization." The *Proceedings* of the American Institute of Electrical Engineers and Association of Iron and Steel Electrical Engineers contain few papers describing installations and operation of steel mill auxiliary apparatus and for this reason the writer heartily agrees with Mr. Friedlaender's remarks regarding the need of such descriptive articles.

Manipulators for Blooming Mills

Manipulators for blooming mills consist of side guards and lifting fingers. The function of the side guards is to guide the bloom into the proper groove in the rolls while the lifting fingers are used for inverting the bloom.

A reversing mill is usually provided with four moving side guards two on each side of the mill. Occasionally a set of lifting fingers is provided on each side of the mill, but as the bloom is usually turned exclusively on the pulpit side, fingers are more commonly provided there alone.

Fig. 1 is a general view of the entering side of a reversing blooming mill equipped with electrically operated manipulators. The two side guards are clearly shown, and, on closer inspection, the tops of the lifting fingers may be detected inside the left hand guard.

Each side guard on the entering side of the mill is connected by suitable mechanical means to the corresponding guard on the delivery side, so that the right hand and left hand guards on opposite sides of the mill move simultaneously and are always in line.

Fig. 5 shows one method of mechanical connection between the motors and the side guards. Two motors, one on each side of the mill, are geared through slip clutches to a common shaft on which are mounted four pinions. The pinions engage with an equal number of racks. Two of the racks are attached to the guard on the entering side and the other two to the corresponding guard on the delivery side of the mill. They are supported by rollers and mechanical stops are provided to limit their outward movement.

As previously stated, the function of the side guards is to guide the bloom into the proper groove in the rolls. The operation of the guards during the process of rolling an ingot consists, therefore, of fast, short movements back and forth across the table. Each guard on a side of the mill can move independently of the other and can make a stroke equal to the width of the table. It is possible therefore for the guards when moving inward to come together or against the ingot at full speed. It is the function of the slip clutch to prevent damage as a result of such action, should the operator be careless enough to allow it to occur.

Fig. 2 is a view of the same mill shown in Fig. 1 but presents a more detailed view of the side guard mechanism.

Electrical Equipment

The motor equipment for the side guards, illustrated in Figs. 1 and 2, consists of four 80-horsepower series motors, two connected in series, driving each pair of guards. Satisfactory operation of the guards is best secured through service series motors although some installations use compound wound motors, primarily because dynamic braking for stopping is desired. Furthermore, solenoid brakes are sometimes used to assist the dynamic braking. In the equipment illustrated, neither dynamic braking nor solenoid brakes are used; when a quick stop is desired the motors are plugged.

The control for each pair of motors is of course reversible and is arranged so that a bank of resistance is permanently connected in series with the motor armatures. This acts as a buffer and reduces the shock when the guards jam together or against the ingot. A one-point reversible master controller is

---

A paper presented before the group meeting of the American Institute of Electrical Engineers, Cleveland. The author, J. D. Wright, is electrical engineer, General Electric Co., Schenectady, N. Y.

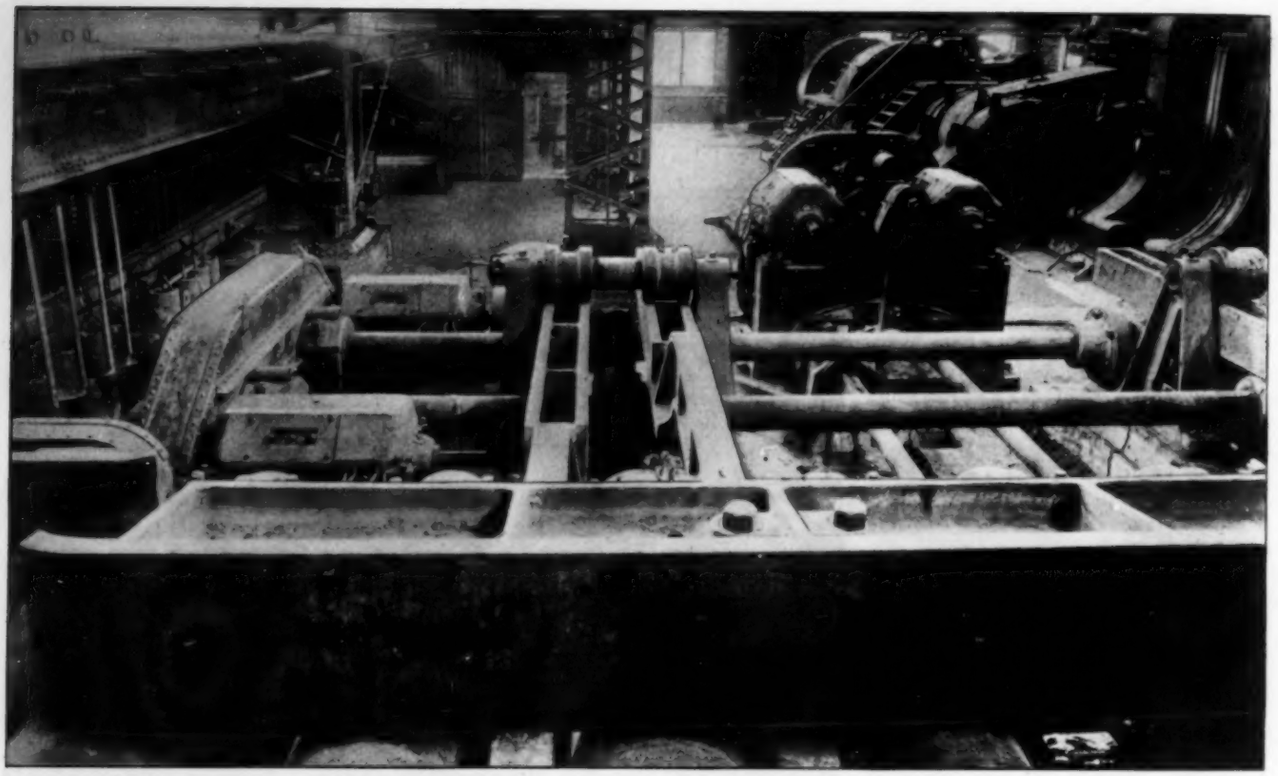


FIG. 2—MANIPULATOR EQUIPMENT LOOKING FROM THE ROLLS

used for each pair of motors. Limit switches are provided for cutting off power when the side guards are moved to the edge of the table. These limit switches are usually of the track type and are operated by movement of the rack. A geared switch might be used but the track type switch is much simpler and more positive in action.

The lifting fingers are carried by a frame attached to the two inside racks connected to one of the side guards, as shown in Fig. 4 and move with the guards. The lower ends of the fingers are pinned to a yoke which is suspended from two horizontal shafts by means of two links and levers. The two horizontal shafts, which are supported by bearings in the finger frame, are connected through cranks to a common driving shaft. On this shaft is mounted a large gear to which the two driving motors are geared. It is evident that one-half revolution of the main driving shaft in either direction from the position shown in Fig. 4 will produce a complete up stroke of the lifting fingers. Another one-half revolution produces a complete down stroke and returns the fingers to their original position.

The motors can, therefore, be either reversible or nonreversible. Successful installations of each have been made.

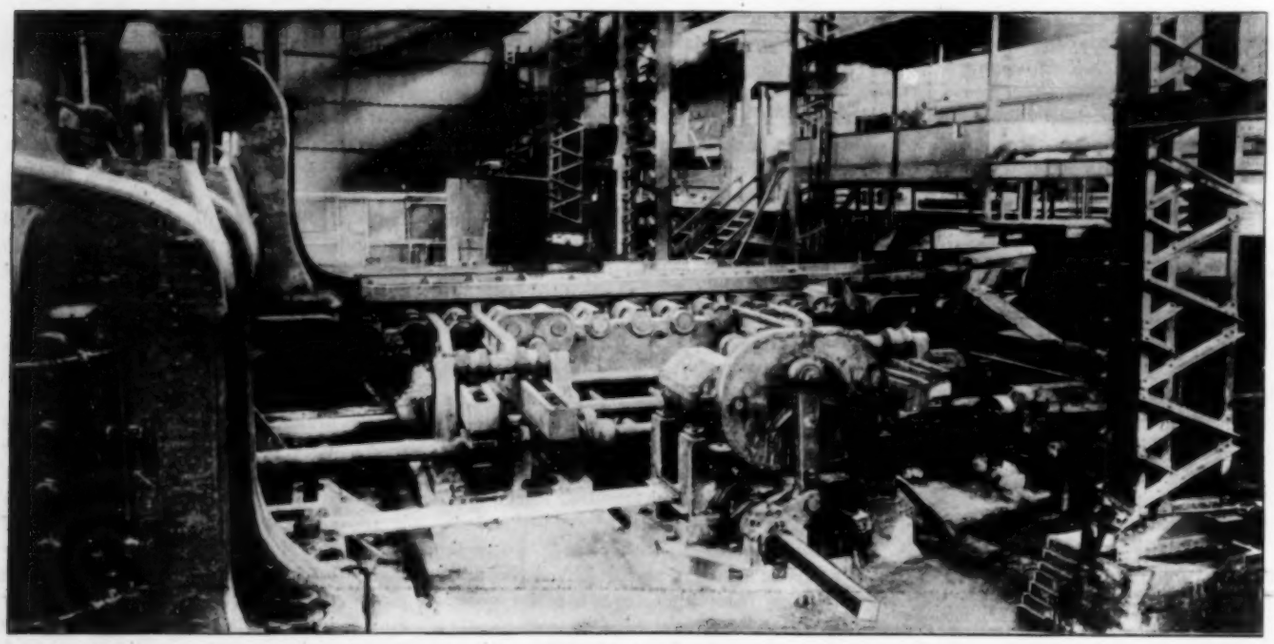


FIG. 3—MANIPULATOR EQUIPMENT LOOKING TOWARD THE ROLLS—THE BARS BENEATH THE MOTOR IN THE FOREGROUND OPERATE THE LIFTING FINGERS

When a nonreversing equipment is used, one complete cycle consists of an up and down stroke of the fingers. When a reversing equipment is used, forward direction of rotation can produce the up stroke and reverse rotation the down stroke.

The motor equipment illustrated in Figs. 2 and 3 consists of two 50-horsepower series motors connected in series, operating nonreversing. For each throw of the operator's master controller a complete up and down stroke of the fingers is produced. The motors are automatically stopped at the end of the down stroke by a limit switch which cuts off power and completes a dynamic braking circuit.

Conditions Governing Design

The dynamic braking connections for a series motor operating nonreversing are comparatively simple. Where reversible control is used, a compound wound motor is preferable if dynamic braking is desired, as the control connections are simplified. Solenoid brakes are required if the equipment is reversible, whereas if nonreversible, no brakes are necessary. It has at times been stated that the operator should be able to control the stroke of the fingers. This of course necessitates the use of reversible control, but the fingers move so rapidly that frequently they make a complete up stroke before the operator throws his master controller to the reverse position to lower them. It has been shown that the equipment for the lifting fingers may be either reversible or nonreversible. The motors may be either series or compound wound. Dynamic braking and solenoid brakes may or may not be used. The operator's master controller may be one-point or multipoint reversible or nonreversible. The limit switch may be arranged to stop the motors when the fingers are at the end of their down stroke if the control is nonreversible, and if reversible the limit switch may be used to stop the motors with the fingers in both up and down positions. Great opportunity exists for standardizing the operation of these devices. To discover the most satisfactory methods of operation, however, steel mill electrical engineers must produce the results of their experiences. The writer sincerely hopes that Mr. Friedlaender's suggestion may be followed and that we may have more papers on installations and operation of auxiliary drives.

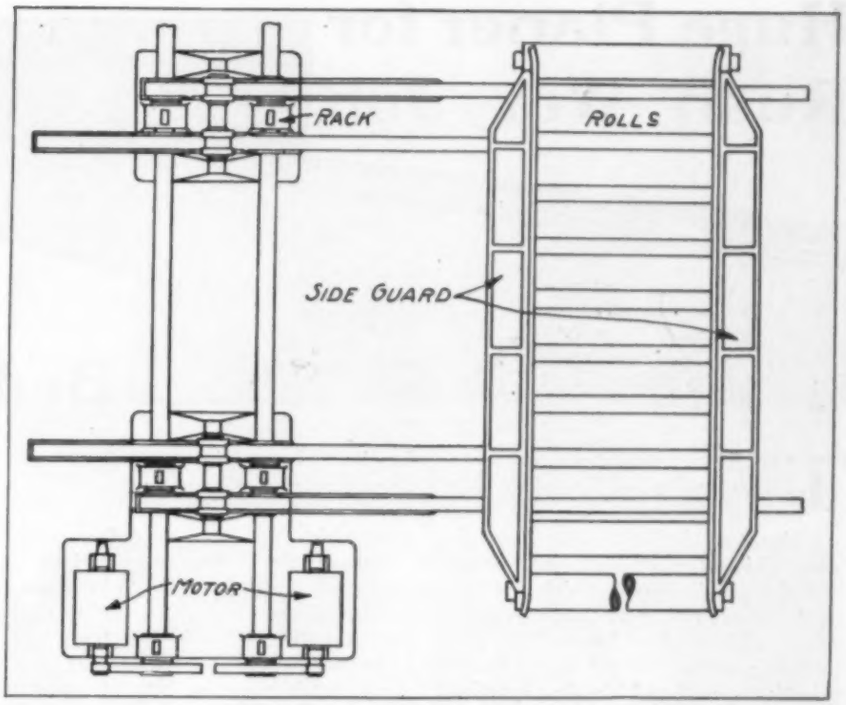


FIG. 5—OPERATING MECHANISM FOR SIDE GUARDS

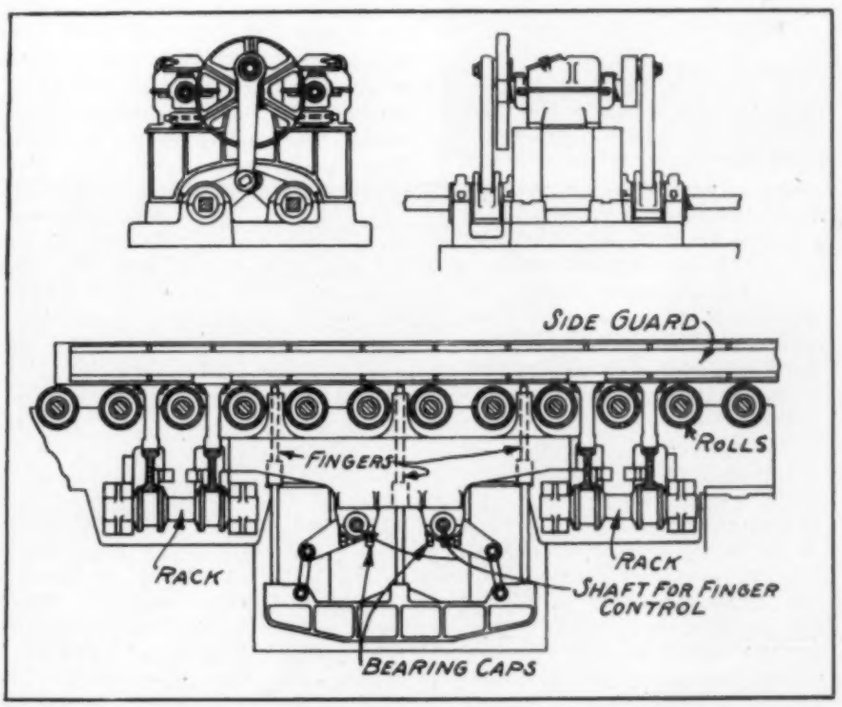
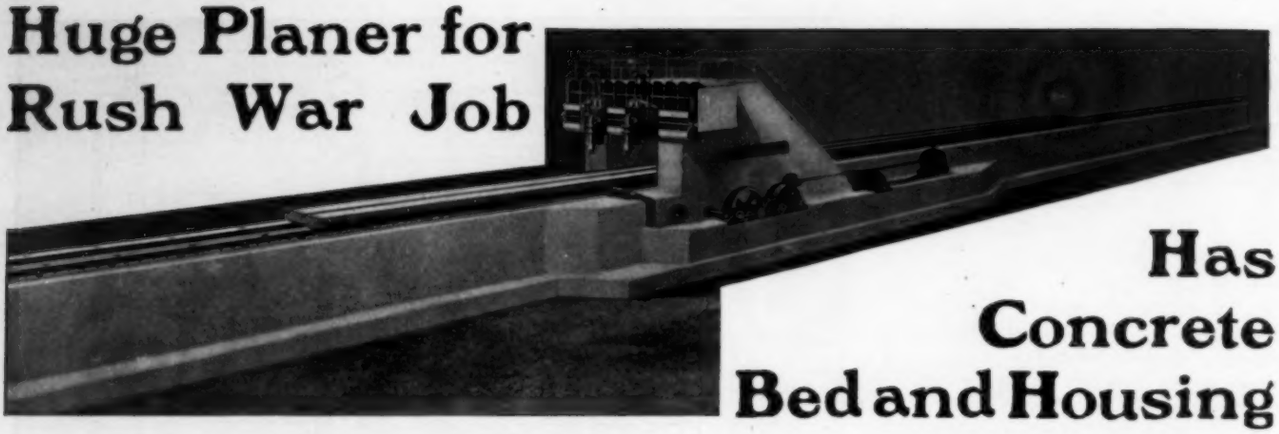


FIG. 4—OPERATING MECHANISM FOR LIFTING FINGERS

Show Large Earnings

Last year's earnings for the Chicago Pneumatic Tool Co., Chicago, exceeded those for any year in the company's history, and the business has increased four-fold as compared with what it was before the war. Net profits for the year were $2,006,371 as against $1,557,980 in 1916. After deducting for war taxes, etc., the balance left for dividends was $1,069,167, equivalent to almost 16½ per cent on the outstanding stock of $6,485,800. The previous year, the balance for dividends was $816,668, or about 12½ per cent a share. Surplus for the year totaled $811,215, making the total surplus $3,648,063 as against $558,716 in 1916, which made the total surplus Dec. 31, 1916, $2,836,859. Sufficient orders are on hand to keep the company busy for some time, according to President W. O. Duntley's statement, and plants have been taxed to capacity for some time. Mention is made in the report to stockholders of the formation of the Little Giant Truck Co., which is owned entirely by the Chicago Pneumatic Tool Co., to market and establish the truck.

Huge Planer for Rush War Job



Has Concrete Bed and Housing

THREE months ago a war problem that seemed to defy solution was put before a Chicago machine tool builder. The ingenuity with which the problem was solved and the rapidity with which the hurriedly conceived plan was put into effect, add another interesting story to the growing record of successful expedients with which the American manufacturer is playing the war game.

The problem was faced by the Amalgamated Machinery Corp., Chicago, which had contracted to manufacture large gun-boring machines. The beds of these great tools must be planed accurately or the bore of the gun will not be true, with disastrous effects upon the marksmanship. The beds of these machines are 70 feet or more long. No planers suitable for handling such sizes were available. Many months would have been required if the company had chosen to have the planers constructed by ordinary methods.

How the Problem Was Met

The solution was supplied by Lucien I. Yeomens, engineer for the corporation. He suggested that the planers be erected out of doors and that they be built of reinforced concrete. They were to be capable of handling planing work up to 90 feet in length.

This plan differed radically from any method ever employed, but a remarkable—and vital—saving in time was promised, so that the absence of precedents was not allowed to stand in the way of a thorough test. The drawings for the work were completed Dec. 24, and the first planer was put in operation early in March. The success of the expedient has led to the construction of four machines instead of the two originally planned. As a result the company has been able to contract for the delivery of additional gun-boring machines.

Construction was rushed during the most severe winter ever experienced in the Chicago district, and for that reason many additional problems had to be met. For instance the circus tent which was first used for shelter collapsed under the heavy weight of the constant snows. A light framework had to be constructed to support the fragments of the tent. Despite the cold and snow, the concrete work was carried on successfully.

In constructing the foundations, a steam shovel excavated a trench 10 feet wide and more than 184 feet long for each planer. An 18-inch concrete base was first placed in the trench and the reinforced concrete superstructure then was poured.

The concrete portion of the planer consists of the bed, 184 feet long, 8 feet 6 inches deep and 6 feet wide, with a trench 14 inches wide along its axis. At the center is the concrete housing. This consists of two uprights and a cross bar. The uprights are 9 feet 6 inches high above the bed, 30 inches thick, 7 feet 4 inches wide at the top and 20 feet wide at the base, the front edge being perpendicular and the rear edge at an angle to give ample bracing. The cross bar is 4 feet square. On the skeleton of concrete, practically a monolith, cast iron ways are placed for the platen to travel. A casting on the face of the crossbar provides the crossrail. Motor and gear drive is employed.

The ways are cast in 12-foot sections, 4 feet 10 inches wide and 10 inches deep. Lugs project 3 inches from the bottom into the central trench, giving a bearing for screws which permit lateral adjustment in lining up the bed. The ends of these sections are not machined, the space of about ¾-inch left between the sections being caulked with oakum to allow for expansion. Each section is provided with four rows of 1¼-inch anchor bolts, 16 in each row, to hold it to the concrete base. An equal number of 1-inch jackscrews bear through the casting to the concrete. These are properly tightened to give an accurate level, lateral alignment being obtained by screws and lugs as outlined above. One side of the bed has a V-shaped guide for the platen and the other slide is flat. Oil pockets with rollers mounted on springs provide lubrication to the ways. These pockets are in pairs, with a by-pass of ½-inch pipe to return the oil carried from one to the other along the rail.

Leveling the Bed

The bed had to be leveled accurately and this was accomplished by employing the latest engineering methods and devices available. Three levels were run, with the transit, the level and the straightedge. The error remaining is less than 0.002-inch in the 184 feet of length. The precise level employed is known as a 2-sec-

The Story in a Nut Shell

THIS giant planer is 184 feet long and planes 72 inches wide by 90 feet long. The rail is 4 feet square. The railface and heads weigh 24,000 pounds. The housings are 30 inches thick, 8 feet wide at top and 21 feet wide at bottom.

The planer contains nearly 250,000 pounds of metal and 13,500 cubic feet of concrete, reinforced by 34,000 pounds of steel. Total weight of planer 1,600,000 pounds.

A view of the assembled planer is shown above. At the top of the facing page the illustration shows the concrete ready for bolting the cast-iron ways into place. Below is shown the crossbar of the housing, toolholders and adjusting mechanism. The arrangement of the motor and belt drive is shown at the bottom, together with a view of the steam shovel excavating for the planer foundations 184 feet in length.

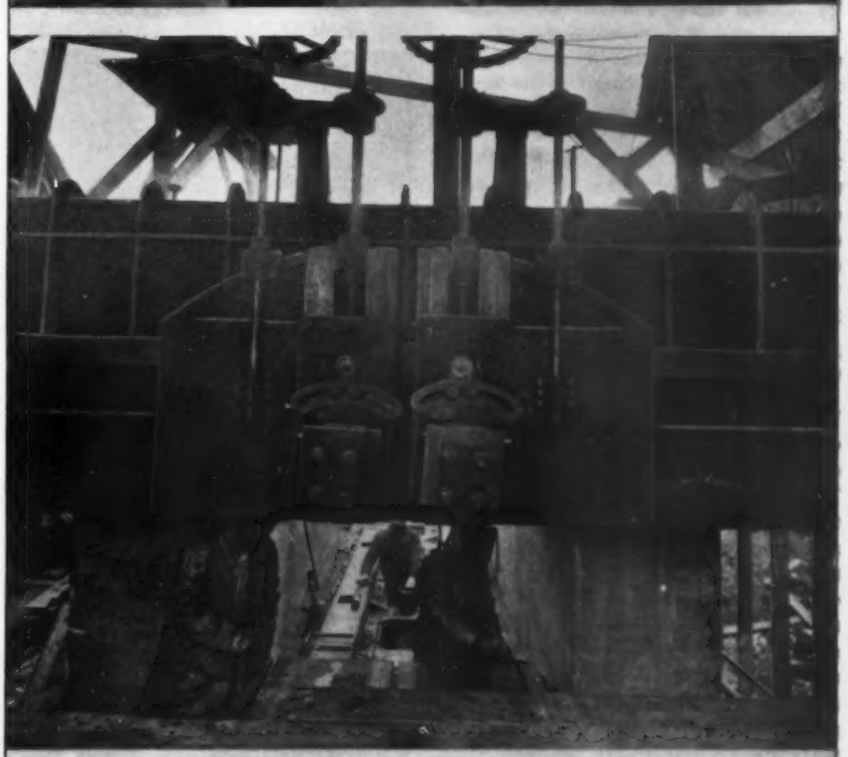
ond instrument. Much of this work was done by D. L. Derrum, works manager for Winslow Bros., Chicago. He formerly was in charge of the shellmaking shops of the Canadian Cement Co., Montreal, Que. Leveling work was also done by Professor Berger of Northwestern university, Evanston, Ill.

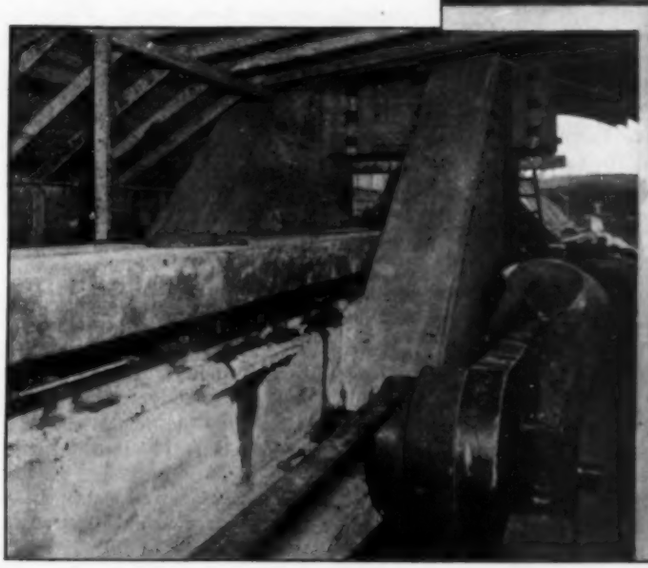
The platen of the planer is made up of nine cast iron sections. The head section is 9 feet 3½ inches long, the seven intermediate sections each 9 feet 11 inches long and the tail section 10 feet 11½ inches long. They were cast hollow with recesses through which reinforcing rods were passed. After assembly, concrete was poured to fill the interior and to give weight and rigidity. Each section has a staggered end with a bearing of 20 inches on the adjoining section. This offset is both vertical and horizontal and assists in making the platen rigid. The ends of the sections are not machined and the opening of about ¾-inch remaining on the top is caulked with oakum.

The platen sections are accurately machined on the top, then reversed on the planer and the bearing surfaces planed to a master-block, giving each section exactly the same thickness. The care given in leveling the planer bed and in making the platen of the same thickness from bearing surface to top eliminates as far as possible any possibility of error in the functioning of the planer.

Assembling the Platen

After being machined, the platen sections were assembled on the planer bed and a cast steel unmachined rack bolted to the bottom surface, the rack sections breaking joints with the platen sections. The motor then was started slowly and the sections pushed





tightly together. While held in this manner, dowel holes were drilled through the rack and platen and dowels were inserted, the bolts tightened, and the platen was fully assembled. Reinforcing rods then were placed in the hollow interior and concrete poured, binding the sections and giving the requisite weight.

On the face of the platen, three slots are provided for bolting work in place. A widened portion at each joint allows the bolts to be inserted. The sides of these slots are machined. The total length of the platen is 92 feet, with a width of 5 feet and a depth of 13 inches.

On the crossbar of the housing, a ribbed casting is secured by 12 bolts, 1½ inches in diameter, which pass through the 4 feet of concrete and are grouted in after being set. On this casting the crosshead is machined. This carries two heads and provision is made for each head holding two tools, one taking the roughing cut and the other, a few inches to the rear, making a second cut. Hand adjustment by micrometer gage gives the desired degree of accuracy in setting the tools. Adjustment is made to 0.001 inch.

Arrangement of Motor Drive

Power is supplied to each planer by two motors of 40 horsepower each. One is for the cutting stroke and the other for the rapid traverse return. They are automatically air controlled, the reverse being obtained by movable trip lugs placed on a bar along the side of the platen. The motor drives through a belt connected to a tight pulley and a 1110-pound flywheel on the jackshaft. A second belt connects with a tight and loose pulley and then by a train of five reduction gears to the bull gear that engages the rack. These gears are placed in the 14-inch trench in the center of the bed, the motors being placed close to the housing. The return is secured through the same gears, the automatic trip shifting the belts on the first reduction shaft, which carries the tight and loose pulleys.

Since operations were started an interesting fact has been demonstrated. The power required to carry the work under the tool is less than that required to return the platen at higher speed. In other words, the weight of the platen and castings is so great that the resistance caused by the cut is less than the speed requirement on the return. The cutting speed is about 20 feet per minute and the return about 60 feet per minute.

Bed and platen sections have been designed so that no two sets of joints ever meet at the same time, eliminating possible jars that would occur.

The gun-boring machines which will be planed on these huge planers will be manufactured in one type, three sizes being furnished. The spindle sizes vary from 6 to 10 inches and the swing from 27 to 48 inches. Lengths vary from 70 to 90 feet, according to the requirements of the purchaser.

The beds of the first gun-boring machines to be turned out are 70 feet long. They are made up of a head section 30 feet long and two 20-foot sections. These castings are squared at the ends and then bolted to the platen of the planers. The top bearing surfaces are machined to a high degree of accuracy, the work being done on the entire bed at one time to avoid irregularities that might result from machining them separately.

PLATEN BOLTED AND DOWELED WITH REINFORCING BARS IN PLACE READY FOR CONCRETE FILLING

To square the bed castings for the gun-boring machine an unusual machine has been devised. A jig is bolted to the top of the casting and this machine, weighing 10 tons, then is lowered to its position on the jig. From a motor, gears carry power to a solid cast gear, 6 feet in diameter, which carries a crossbar mounting two cutting heads. These engage the end of the casting and plane it to a true finish. A star wheel at the end of the crossbar is tripped by a projecting lug at each revolution, feeding the tools for the next cut. While one end is being cut square, a jig is being placed on the opposite end and the cutting-off machine then is picked up by a crane and placed on that end.

For assembling the gun-boring machines, a 50 x 250-foot building has been erected, with two immense doors, 40 feet high, one 43 feet and the other 50 feet wide. Two yard cranes, each serving two planers, enter these doors 25 feet above the ground. These cranes unload castings from cars to the planers and take the machined castings to the assembly building. The completed machines then are conveyed by the cranes back to cars for shipment. Each crane is of 25-ton capacity. A 5-ton crane, 12 feet above the floor of the assembly building, serves the floor.

Polishing With Alundum

Polishing plays an important part in the process of manufacturing practically all kinds of mechanics' tools and implements. Of the various polishing materials, alundum grain has been used for many years. From different places, however, where alundum has only recently been tried, there are many interesting reports in connection with these trials on new work. Of these the following are typical examples given by *Grits and Grinds*, published by the Norton Co., Worcester, Mass. One case is the polishing of shovels after the blade has been mounted. The material is ash wood and there is some contact with steel. The grain is mounted on belts five inches wide and six feet long. Belts set up with alundum are said to be running three days and are polishing 150 to 300 dozen handles without burning the wood. Sand was used previously and it is said that the sand belts lasted only from four to five hours while the production was from 10 to 12 dozen.

The following cost records are reported from a government arsenal after trying out alundum for polishing butt plates. The total wheel cost for polishing 300 pieces was 40 cents and 3 1/3 alundum wheels were used. The cost of polishing 1000 floor plates with 6 2/3 alundum wheels was 80 cents. The cost of polishing 1000 extractors with 2½ alundum wheels was 30 cents. In putting the first polish on receivers one alundum wheel polished 600. In polishing 1000, 1 2/3 alundum wheels were used at a cost of 30 cents. The arsenal records are said to show marked reductions in polishing costs compared with the costs before this abrasive was introduced.

In another plant, on polishing hardened steel skate runners, with a groove the full length, an alundum wheel averaged 16 pairs. This is a severe operation as the wheel is required to hold a corner.

Automobile manufacturers, also, have tried alundum for polishing purposes and the results are said to be satisfactory for polishing a number of parts.

Quartering the Industrial Army

Our Army Must Be Supported by Labor at Home—This Labor Cannot be Secured and Held Unless Housing is Provided—Housing is a Public Problem

BY H. W. FORSTER

THERE exists a nation-wide shortage of housing in our industrial centers. The situation is critical. Many of our communities are already suffering seriously from lack of adequate housing for their workmen. The situation is growing worse; houses cannot be conjured out of the earth. They require considerable time to build in large numbers. Vigorous attack upon this problem has been made in many cities and must be made throughout the country.

The present shortage is an outgrowth of three basic conditions: Under ordinary business conditions there is never an appreciable excess of adequate housing in our large cities. Normal building activities, during the past two years have been materially retarded, because of the high cost of material and labor. The great rush of workmen to our industrial centers has accentuated what would be an acute situation even under ordinary conditions.

Employers are behind a number of housing projects now under way, and the investigation of the situation by the United States government, with regard to the prompt delivery of large munition orders indicates the necessity for action. The conditions in a number of districts must be remedied if production under government contracts is not to suffer seriously. It is interesting to note that the concentration of Great Britain upon war operations has caused so serious a shortage in industrial housing that it has been recommended that $5,000,000,000 be appropriated for the purpose of building 1,000,000 homes after the close of the war. This will make up the housing shortage and furnish employment for a considerable portion of the soldiers who return from the front.

Why Housing is Essential

As it is impossible to get pure water from an impure source, or good crops from poor seed, so it is impossible to get stable, efficient, and satisfied labor from congested and insanitary homes. Most progressive employers have realized this for a considerable time, but it has never been brought home so forcibly as under present conditions. Bad news spreads rapidly, and American labor, including foreigners, is well advised as to the general housing inadequacy of industrial centers. Many good men refuse to go to such points to apply for work, and those who do go are likely to find conditions unsatisfactory, and move on.

The most obvious objection to crowded housing is the deleterious effect upon health. The records are clear upon this point. The greater the crowding, the greater the percentage of tuberculosis. Morals are seriously affected by crowding of families; more seriously by crowding together of several families; and most seriously by addition of boarders under congested conditions. The general experience has been that unhygienic living and a lower standard of morals, coupled with uncomfortable, inconvenient, and unesthetic living conditions, have a decided effect upon the efficiency of the worker. In order to obtain efficiency with the workmen now employed, and to take care of additional ones, adequate industrial housing must be provided.

It is difficult to ascertain the total housing need of a community, and even more difficult to determine what proportion of the total need is for Americans and what for foreigners. Most of the recent industrial housing developments have been designed primarily to take care of Americans of the higher type; probably on the assumption that as these families vacated houses from time to time, the less desirable quarters automatically would become available to those lower in the social or financial scale. It is, however, considered desirable to provide new houses of suitable types of foreign workmen in those communities where many are found; and that means in practically every community from the central states to the Atlantic seaboard.

It is obvious that it is necessary to provide housing to take care of families living by themselves, families who take boarders, and boarding houses.

Size of Houses

A recent compilation of data on 17,643 houses, covering some 200 industrial housing projects, made by the United States government, developed the information that one-third were four-room size; one-sixth were five-room size, and one-sixth were six-room size.

The average family generally consists of father, mother, and three children, and to house such a family properly there should be available at least three bedrooms (one for the parents, one for the male children, and one for the female children), a combined kitchen, dining room and living room, or two rooms, one for kitchen and dining room purposes and the other for living purposes. In other words, four and five-room houses are theoretically correct, especially for foreign families, and experience will bear out the fact that these are the most popular sizes. For larger families, and particularly for those who desire to keep a few boarders, the six-room houses have proved popular among foreigners. The average American family unquestionably prefers about a six-room house if the income is sufficient.

The United States government report, previously referred to stated that the information regarding 53,176 houses indicated the following arrangement: 48 per cent single houses; 35 per cent double houses; 11 per cent row houses; and 6 per cent no information.

There is little doubt that the single house is the ideal house to build where it is expected to sell. It is not difficult to sell half houses where they are built in pairs, but it is difficult to sell row houses individually. Experience seems

Morale

AMBITION, efficiency, determination, confidence, fight and a tenacious cheerfulness called "pep" are all bound together in that term—morale. Great admiration is expressed for the morale of the allied troops, and constant reference is made to those factors of food, clothing and amusement which contribute to the morale of our troops in the field. But is this term applicable only to the military? The industrial army cannot perform the huge tasks necessary to the progress of the war unless it is endowed with something of the same spirit characterized as morale. This in turn hinges upon the one great factor—comfortable home surroundings. Mr. Forster, in an able manner, analyzes this problem and suggests the solution.

From a paper presented at a meeting of the Engineers' Society of western Pennsylvania. The author, H. W. Forster, is general manager, Independence bureau, Philadelphia.

to indicate that row houses should be intended for renting purposes, as they do not sell readily, and lower building costs and less ground occupied make lower rents possible.

It is necessary that the smaller the house the better should be the design. Where one general room is used for several purposes and bedrooms are small, the importance of anticipating the actual needs of the occupants is particularly great. A number of architects have realized this, and have developed excellent plans for relatively small low-cost houses.

Equipment for Houses

Company after company that has put up housing for its employes has discovered that the cost was running far higher than anticipated, and that because of this fact it would not be possible to earn a satisfactory return upon the money if rents were on a scale which their workmen could afford. Analyzing each situation has generally developed the fact that the employer has tried to give too much. The engineer who built an industrial plant 50 per cent larger than necessary and who added a considerable number of frills would be no more at fault than the man who built unnecessarily large and elaborately appointed houses for working people. To be successful, industrial housing must be upon the same economic basis as any other form of industrial operation.

Looking at this question more closely the causes for excessive cost of construction are usually among the following:

Building generally six-room houses where four and five-room houses would answer very well.

Putting a large amount of money into roads and cement sidewalks, when it would be feasible to keep such improvements for some future time. A very large percentage of our Americans of the better class are today living on unpaved streets, and are making use of cinder or plank walks.

Furnace or other central heat is expensive under present conditions, and in many houses superfluous. Most families who come from less pretentious homes own a supply of stoves and are accustomed to using them. In fact most of the smaller homes rely upon the kitchen stove to heat the combined kitchen, dining and living room, and to provide a little heat for the remainder of the house.

Electric light in most communities is considered almost a necessity, and forms a convenient, low-priced, and relatively safe form of lighting. The need of extending gas to workmen's houses in which the women are used to cooking on coal stoves, is not nearly so great.

Running water is absolutely essential, because of its great convenience and feedom from the menace which always exists with wells. A sewerage system is not nearly so important, and the cost of many industrial housing projects has risen materially through installing an elaborate sewerage system. Where developments are in outlying sections, it is feasible to delay the installation of sewers for some future time. With running water, a privy does not constitute as much of a menace as where wells are used.

It is a hopeful sign that certain types of foreigners demand a bath-room in any house which they purchase or rent. In workmen's houses, bath-rooms occasionally are added afterwards and are placed in basements when there is sufficient room.

Industrial housing includes all types of construction, frame, stucco on wood, brick veneer, brick, tile, and reinforced concrete. The best material will vary with the locality and will depend upon cost, availability, speed of construction, and upon depreciation and upkeep. The depreciation and upkeep on a concrete house which is rented will probably be in the vicinity of 2½ per cent per year, and it may be double this on a frame house.

The fundamental question, if industrial housing is to be upon a business-like basis, is how much rent can workmen afford to pay for homes. There has been a tendency to make use of the rule that 20 per cent of wages could be paid for rent, and 25 per cent where payments are made upon the purchase. While 20 per cent works out quite closely in many average cases, the problem is how much the man has left for his rent and other expenses after he has paid for the necessary food. Food comes first in the scale of human needs. Unfortunately, the man with many mouths to feed has more need of a larger and more costly house and less money to spare for rent.

Recent careful investigations and calculations of the minimum cost of food necessary to feed an average family properly give the following total of necessary calories per day:

	Calories
Father, 150-pound laborer	3000
Mother, 150-pound woman, working hard	3000
Child, 12 to 15 years old	4500
Child, about 8 years old	2500
Child, about 3 years old	1300
Total	14,300

These figures are generous for growing children, but only moderately so for the parents. Assuming intelligent purchase of the food necessary to supply the above total number of calories, properly proportioned to take care of the needs of the body, the minimum cost of 1000 calories today will be about 11 cents, or about $1.57 per day, or something like $47 per month. It is true that many families are undernourished by reason of buying insufficient food, but it is also true that the average housewife does not buy with scientific intelligence, and consequently what is saved by undernourishment is probably spent through unwise purchasing. The problem then is to subtract from the family income the necessary food expenditures, and then take a percentage of the balance as being available for rent. This has been placed at a maximum of 40 per cent, especially with low-wage workers. The man who earns $90 per month, spends $47 for food, and has $43 left for all other expenses. If he pays 40 per cent of this for rent, he has approximately $17 as a maximum rent item. Many workmen, particularly skilled Americans, can and do pay considerably higher rents, but there are very large numbers whose rent paying capacity ranges from $10 to $15 per month.

The government reports show that out of 17,643 houses, 69 per cent. of the four, five, and six-room size rented for not over eight dollars per month. Such a rental is not economically possible in cities, where land and houses now cost so much, nor is it necessary with the relatively high wages which are now paid. These figures apply to a large extent to mining and cotton-mill towns, where houses are often small, poorly built and poorly maintained, and where low house rent unfortunately is a factor in establishing wage scales. It is interesting to observe that 57 companies, having invested about $15,000,000 in houses, earned a gross of 8.3 per cent average over a five-year period, that eight coal companies with $2,800,000 invested earned 11 per cent average over a five-year period, and that one company's annual return was as high as 20 per cent of its investment.

What Housing Costs Today

If houses are to be rented upon a 10 per cent gross return basis, the total cost of the house to the man who can pay $17 per month rent should not exceed $2000, and to the man whose rent is to be $10 per month not more than $1200.

Where houses are built of reinforced concrete, it probably is good business to rent them for nine per cent, or even eight per cent of their value, because of low depreciation and upkeep. With frame houses, 10 per cent is the absolute minimum that is advisable, made up as follows:

	Per cent
Return on investment	5.00
Taxes	1.00
Depreciation (sinking fund)	2.00
Upkeep	2.00

The range in house building costs is great. In the South, where frame construction is common and no elaborate heating systems are necessary, attractive cottages are built for as low as $700 to $800. Well-appointed four-room houses for rental purposes can be built in the residence sections of most cities at not to exceed $2000. Splendidly designed six-room houses of

attractive appearance, with all modern improvements, in large developments have been put up as costs of from $3000 to $4000.

Avoid Charity

The consensus of opinion of those who have studied the industrial housing problem is decidedly against anything savoring of charity or paternalism. The essential arguments are:

Workmen resent anything of this type, being possessed of as much self respect as the average citizen of somewhat higher social standing. Workmen feel that they should pay their way and that they should receive adequate wages to enable them to do this.

Any business activity which is not making money will prove unpopular, and industrial housing that is netting 2 per cent or some such figure will not be kept up in a manner to get the best results.

If an employer has not sufficient houses to take care of all of his people, there will be discrimination.

The building, in a large community, of some houses which are not rented on a businesslike basis will upset real estate values generally.

Housing projects where houses are rented or sold should return at least 5 per cent and preferably 6 per cent. The advantages of better labor conditions generally will make the housing investment attractive.

Selling and Renting

It is generally believed that houses should be sold when possible. A man who buys a house is a better citizen, is less likely to take part in labor disturbances, and is almost bound to remain in the community. The monthly payment method of selling houses to both American and foreign workmen is practically standard. An initial payment, preferably 10 per cent, closes the deal, and monthly payments upon a slightly higher basis than the rent take care of the principal and interest in a period of 10 to 20 years. It is necessary, however, in every industrial community to have a considerable percentage of houses for rental purposes, as many employes cannot and will not buy. On the other hand, if a large proportion of new housing is sold, those who purchase homes will leave old quarters to those who rent.

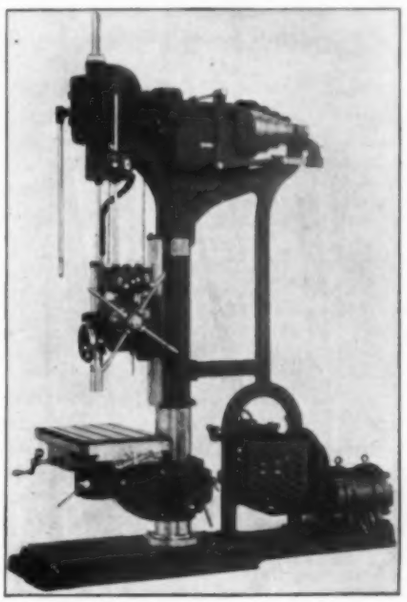
It is important to note that foreigners usually have stronger home-buying tendencies than Americans, and that those who deal with foreign workmen find them prompt in meeting their obligations.

Agencies for Securing Housing

Experience during the last two years has made it clear that employers cannot look to individuals or real estate operators to provide the necessary housing for employes. The ordinary workman generally does not build his own house. He is more interested in buying than in building. He is not certain of the permanence of his job and of his desire to settle in the place where he is now working.

The real estate operators are uncertain as to how long rush business will continue, have no enthusiasm for putting money into industrial housing, nor the necessary funds to handle big projects. This has made it necessary for employers, either individually or collectively, to provide at least a portion of the housing needed. A considerable number of such projects are now actively under way.

The United States government considers putting a considerable sum of money into industrial housing, either by providing housing directly or by loaning money at low rates of interest to employers who will build the houses.



MOTOR-DRIVEN UPRIGHT DRILL

A scheme of action by individual employers or by groups of employers has now been established along the following lines: A separate company is formed and a competent management put in charge of its operation. This tends to separate in the minds of employes at least, the employer from the housing operation, and relieves the manufacturing men from the responsibility of handling housing as a side line. Careful analysis is made of conditions and the probable needs of the community for a period of years ascertained. A careful plan is developed with an estimate of the amount of money needed for the initial development.

At least 50 per cent of the total cost can be carried by the banks on first mortgages. The housing company provides the additional capital, and, where property is sold, carries the second mortgage. Construction is put through in a systematic manner, and on a scale large enough to secure the advantage of wholesale methods, and on a long-time basis.

Rapid Upright Drill

The upright drill shown in the accompanying illustration was recently developed by the Weigel Machine Tool Co., Peru, Ind. This drill was designed for a rapid production machine and it embodies many interesting features. The compound platen is adjustable both ways by means of feed screws equipped with dials reading to thousandths of an inch. These dials are adjustable so that all readings can be begun at zero. Eight feed speeds are provided for each spindle speed and the feed changes are made by means of sliding gears. It is said that any feed is easily and quickly selected by means of a feed plate attached to the machine and through the medium of convenient levers for gear changing. The machine is equipped with a quick-return feed and an automatic stop which throws out the feed at any predetermined depth. A tapping attachment also is provided. It is placed directly on the spindle and has a reverse of two-to-one for backing the tap out of the work. These machines are equipped with either belt or motor drive. The machine illustrated is equipped with motor drive. The motor is mounted on a separate base bolted to the main base, and the driving head and pinion are entirely covered with guards. All other gearing and the lower cone pulley is also equipped with guards and a belt shifter is provided for shifting the belt from one cone step to another.

Adds Molding Capacity

A foundry addition has just been completed by the Burnside Steel Co., Chicago. The completion of this addition and the installation of a 2½-ton converter made recently will enable the company to double its capacity for making small and medium size steel castings, in which it has specialized for some time. The company is under the management of the following: President, H. F. Wardell; vice president and treasurer, George L. Pollock; vice president, John Fletcher; secretary, Charles S. Daniels. The company maintains sales offices at 548 Railway Exchange building, Chicago.

How Small Tools Were Made Quickly

New Method for Making High-Speed Steel Reamers Recently Developed in a Railroad Shop—Manufacturing Process Designed to Meet Emergency Shows Substantial Saving in Cost and Time

THE necessity at the present time of maintaining production at a high level has resulted in the development of many ingenious methods for cutting down the delays resulting from deferred deliveries of materials. For instance, the demand for high-speed steel has not only sent prices to a high level, but deliveries on this material now take from two to four months. Confronted by an emergency which made it necessary to secure small tools earlier than manufacturers could promise deliveries, a process has been developed at the Jackson, Tenn., shops of the Illinois Central railroad for making inserted-tooth high-speed-steel reamers. The reamers were in service a few days after the first plans for the process were conceived.

Tool Saves $55.20

The process consists of welding the blades of reamers and cutters into an integral body by the use of thermit steel. A spiral, high-speed steel reamer made by this process is shown in Fig. 1. This tool cost the Illinois Central railroad $13.25, which shows a remarkable saving over the cost of a like tool bought in the open market, the quoted price of which was $68.45, net, 90 days delivery. It is pointed out that the tool in question should show high efficiency in operation for two reasons: First, as it is practically a solid unit, any tendency toward chattering often present when inserted-blade tools are used, is eliminated; second, a solid tool conducts the heat, caused by cutting, away from the blades rapidly as the solid construction readily absorbs heat which tends to keep the tool cool through radiation.

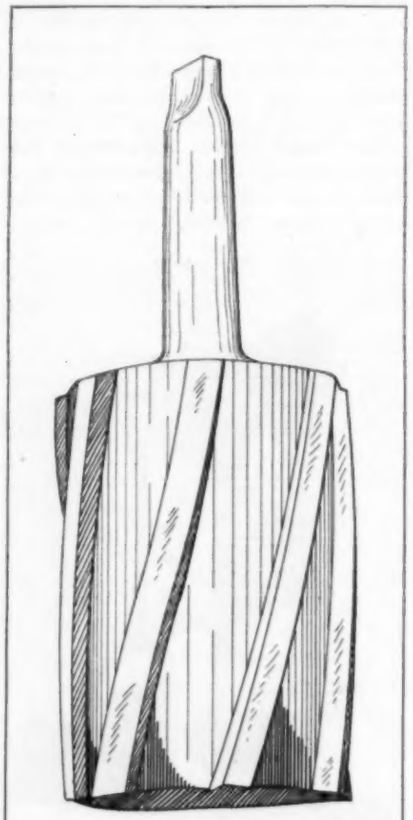


FIG. 1

As shown in Fig. 1, the blades, which are made of high speed steel, are helical in shape cut to conform to the length of the thermit steel body that confines them. These blades of course, can be set to any pitch desired, from a straight line to an extreme angle. The taper shank is made of round carbon steel, machined to the proper taper to fit a Morse taper socket.

Method of Manufacture

In making a reamer by this process, the first step is to cut the blades from high speed steel. They are then bent to the helical shape desired. The length should, of course, conform to the length of reamer desired. A cylinder is provided which is bored out to the same size as desired in the finished reamer.

The blades are set in this cylinder and spaced properly, with their cutting edges pressed firmly against the cylinder wall. Then a carbon-steel

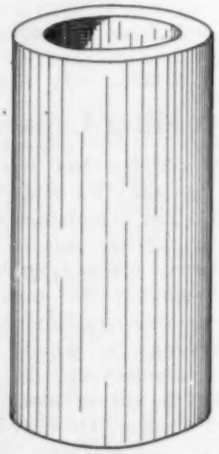


FIG. 2

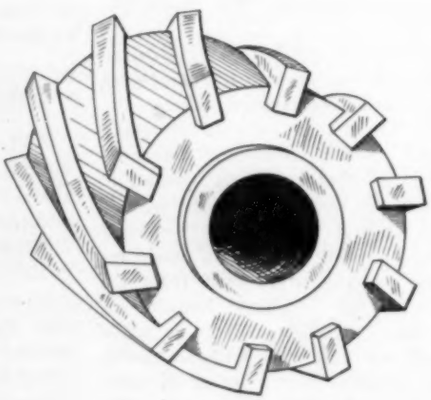


FIG. 3

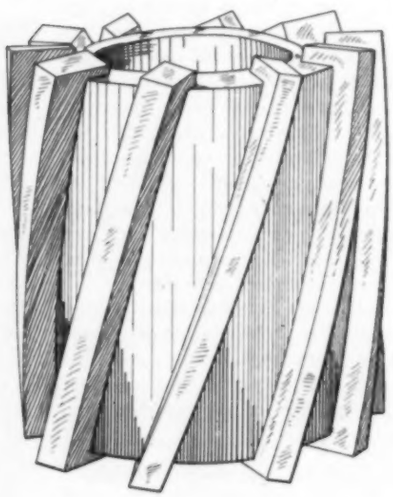


FIG. 4

FIG. 1—SPIRAL REAMER MADE BY THE THERMIT PROCESS
FIG. 2—THE CARBON-STEEL CORE. FIG. 3—THE HIGH-SPEED STEEL BLADES SET IN A WAX MATRIX.
FIG. 4—THE FINISHED REAMER

core, made of tubing, is placed in the center. This core is shown in Fig. 2. Next, the space between the core and the cylinder is filled with molten beeswax. After the wax has cooled, the contents of the mold, that is the core, wax and blades are removed intact. This is easily accomplished by heating the outside of the cylinder slightly, which causes expansion, and at the same time melts the outside of the wax slightly. The matrix thus formed is shown in Fig. 3. The tube core is now heated slightly on the inside, which allows it to slip from the wax matrix readily.

Thermit Must Flow Freely

Next a solid steel core is inserted. This core should be a little longer than the matrix and should be placed in position with one end flush and the other end protruding. The matrix is then ready to be placed in a regular mold for thermit welding. The matrix is placed in the mold upside down, the molding material being rammed to within 1½ inches of the blades. At this point, the heating gate is directed against the carbon steel core with the pouring gate about 3 inches away from the side of the core. The mold is now rammed up in the usual way. After the mold is rammed up to the top of the reamer, a round wooden riser, about 1 inch larger in diameter than the steel core, is placed in position. This permits a free flow of thermit steel through the mold and into the riser opening.

Completing the Process

The mold is now heated with the preheater to a white heat, which, of course, melts out the wax. The heating gate is now plugged up, the thermit ignited and after reaction has taken place the crucible is tapped. In half an hour the mold can be knocked down and the riser cut off while hot. The finished reamer is shown in Fig. 4.

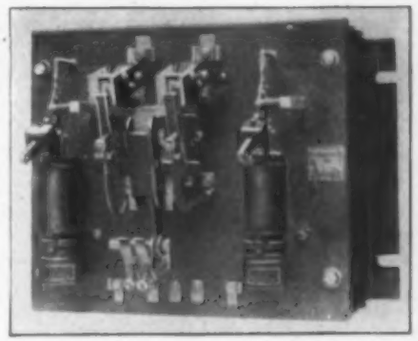
Angle Bending Machine

Heavy demand at the present time for heavy angle benders, particularly for use in ship construction, has led the Kane & Roach Co., Syracuse, N. Y., to place a unit on the market designed to handle angles ranging from light gage 6 x 6 x ⅝ inches. Special rolls are designed to equip the machine for handling I-beams, channels, tee - irons, rounds and squares.

A special feature of the machine is the close position which the rolls bear to each other. Two advantages are claimed to result from this arrangement: First, the material entering the rolls is acted upon immediately, avoiding the straight or flat spot on either end of the piece which would have to be cut off; second, the machine is said to be capable of performing the entire bending operation itself, it being unnecessary to heat the material and start the correct bend.

The top roll can be lifted by a hand lever and the angles or other shapes placed between the rolls without other screw adjustment. When the top roll is in position for rolling it is locked down by means of a gag which is slid underneath the screw. The gag is withdrawn when the roll is raised.

Slide rolls are provided on each side of the bending rolls. These may be swiveled to any desired degree according to the diameter of the circle of the material being handled. They are also adjustable against the angle of the work and are said to keep the latter from twisting or buckling. Each machine is equipped with a scale and pointer to determine the position of the rolls.



AUTOMATIC STARTING SWITCH

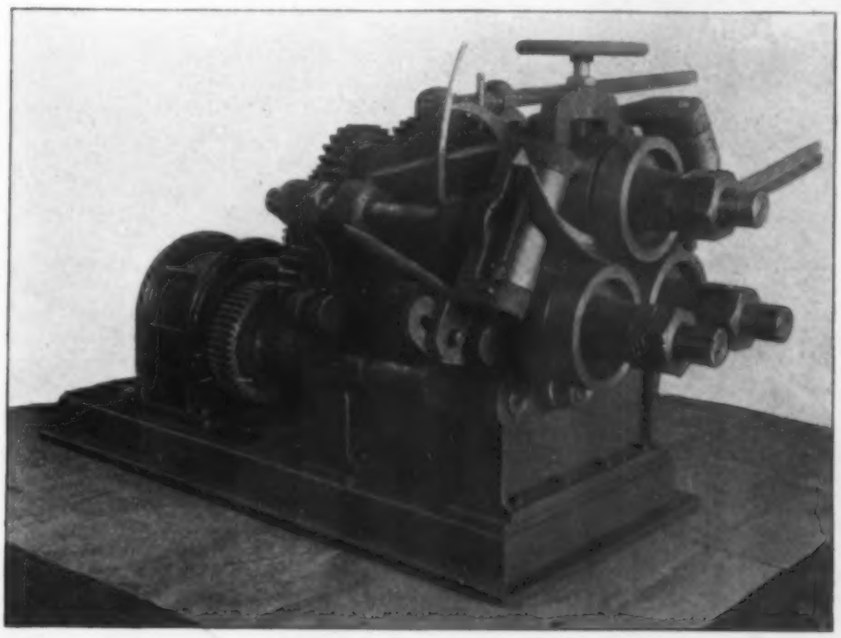
An Automatic Motor Control Switch

Starting and stopping motors from a remote point is often found desirable. This is true in connection with pumps for railroad water tanks or other applications, and coal and ash conveyor installations. The control may be a float switch operated through changes in the water level of a tank; a pressure regulator performing similar service in a closed system; or push button stations, one button being normally open and one normally closed. In any case some form of automatic device must be used.

The automatic starting switch, shown in the accompanying illustration, developed by the Cutler-Hammer Mfg. Co., Milwaukee, is of the double pole clapper type and is designed for single-phase and standard polyphase motors up to 15 horsepower, and for high torque polyphase motors up to 50 horsepower. Mounted on the same slate with the double pole switch are two additional time element overload relays.

When used with float switch, pressure regulator or snap switch, the overload relays are arranged for manual reset, so that when an overload occurs the operator is required to go to the starting panels before the motor can again be started, a feature which is said to result in more careful attention to operating conditions.

Except on some of the smaller sizes both poles of the main contactor are equipped with powerful magnetic blowouts. The clapper switch fingers are the company's standard butt contact construction with hard copper tips.



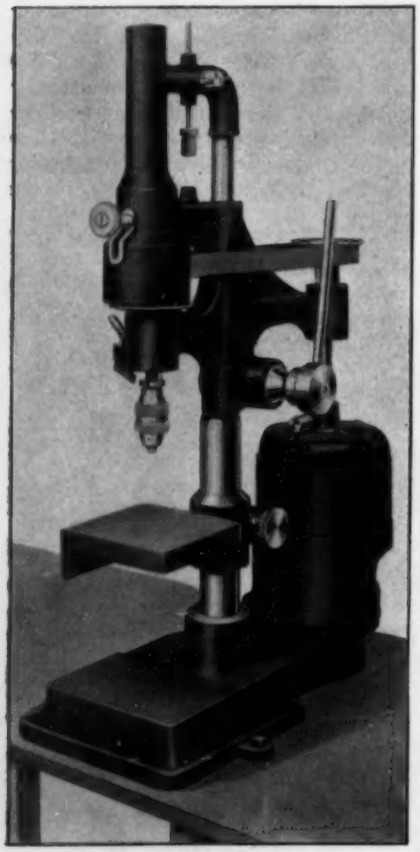
HEAVY ANGLE BENDING MACHINE

Sensitive Bench Drill Press

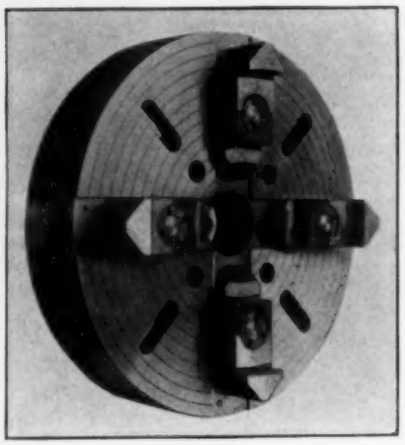
The motor-driven sensitive drill shown in the accompanying illustration has been developed recently by the High Speed Hammer Co., Inc., Rochester, N. Y. The machine is compact and portable, weighing 60 pounds, and occupying a bench space 7½ x 18 inches. It is designed for connecting to lighting circuits where the voltage is either alternating or direct current, 110 or 155 volts.

The machine is equipped throughout with annular ball bearings which are adjustable for wear. A spindle lock is provided to permit the operator instantly changing drills with one hand. As the illustration shows, the motor is placed in an upright position and drives the spindle through a belt which is equipped with an idler for taking up slack.

The machine is designed to drill holes from the smallest practicable size up to 3/16 inch. Two spindle speeds are provided, 2100 and 6000 revolutions per minute. Special pulleys are designed, however, to give any speed desired up to 10,000 revolutions per minute. The platen is designed to be adjusted quickly. It has a ground-working surface 5½ x 5 inches and will take work up to 4⅜ inches high. The spindle end thrust is taken up by an adjustable ball bearing. This bearing is protected by a semitubular shield which prevents oil from being thrown on the operator. For precision drilling, as regards depth, a gage adjustable to thousandths of an inch is provided. The machine will drill to the center of a 6-inch circle.



SENSITIVE BENCH DRILL



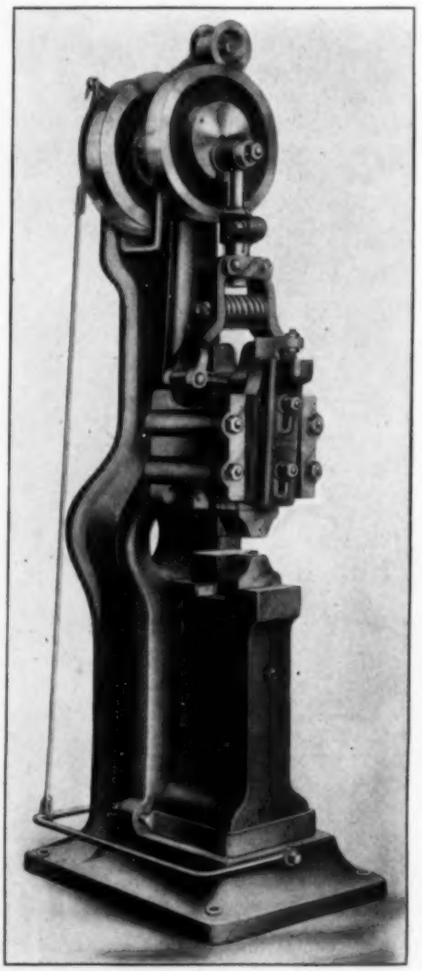
FOUR JAW LATHE CHUCK

Four Jaw Lathe Chuck of Simple Design

The Simplex Tool Co., Woonsocket, R. I., has recently developed a lathe chuck that embodies several novel features. As shown in the accompanying illustration, the sliding surface of the jaws exceeds their height. This feature, it is said, insures rigidity, owing to the fact that the tendency toward springing the jaws out of square is lessened. It is claimed that the chuck has great gripping power and that it will retain its accuracy through a long period of service. The jaws are reversible and slide in slots machined to accommodate them in the face of the chuck. The chuck is of the independent type, each jaw being actuated by a square-thread screw passing through a nut that is made integral with the stud which holds the jaw in place. The face of the chuck is provided with a series of annular grooves for aligning work and four ample slots are also provided for clamping counterweights in position, if necessary, while boring or turning castings the design of which calls for dynamic balancing.

Jib and Face Plate for Forging Hammers

In order to take up more effectively the wear on light forging hammers and also to make possible a finer ram adjustment, the United Hammer Co., Boston, has developed a standardized jib and face plate which will, in the future, be installed on all hammers manufactured by that company. As shown in the accompanying illustration, the jib is bolted through slots onto the face plates. The top of the face plate terminates in a projection and against this a bolt, connected to the ram by means of an arm, brings up at the end of each stroke of the ram. The shock, as in the old hammers, is taken up by the spring on the ram. In the illustration the bolt is almost touching the dog which indicates that the hammer is near the end of its thrust. If a shorter thrust is required, the jib may be raised to a higher position. Both face plates and jib can be installed on older type hammers.



LIGHT HAMMER EQUIPPED WITH FACE PLATE AND JIB

The Dayton Malleable Iron Co., Dayton, O., is installing a 2½-ton electric furnace of the rolling cylinder type developed by Albert E. Greene, 1602 Hoge building, Seattle, Wash.

The Pittsburgh Thermoline Co., Pittsburgh, has issued a booklet advertising a gas made from petroleum for cutting steel and other uses.

Analyze Labor Problems of War

Woman's Place in Industry, Securing Maximum Production from Non-Conscripted Forces, Reassimilation in Business of Returning Armies, Providing Useful Employment for Cripples and Other Subjects Studied by Chicago Conference

LABOR problems of an immediate character created by the war and those which will arise from conditions following the restoration of peace were presented and analyzed at a national conference held by the Society of Industrial Engineers and the Western Efficiency society at the Hotel La Salle March 27, 28 and 29.

Four main subjects were considered. These were women in industry; mechanical equipment in place of men; obtaining maximum production from the men remaining; and readjustments after the war to care for those returning, including the disabled. In view of the importance of the subject of women in industry the paper by C. E. Knoeppel, counsel on organization and management of New York City, took a high position in the program. This paper represented a study and summary of the answers to 1000 questionnaires sent out to manufacturers, labor heads and economists. Opinions were sought as to the need for women in the place of men, how to obtain them, what tasks are suited to their ability and how to surround them with best conditions for work.

C. E. KNOEPPEL'S voluminous paper covered the subject in much detail. He deduces from the answers that women are not now needed generally in industry because there is a vast reservoir of male labor yet untouched, which can be drawn on to supply the places of those who have gone to the front. He finds that thousands of men are employed in various occupations where they can be spared to industry without impairing business before it will be necessary to call on women. There are the men used in elevators, offices, retail stores, taxi drivers and a score of other employments where women can serve readily. Then there are alien enemies whose productive power can be utilized under supervision and the idle, both the rich and the poor, who can be forced into useful production. When these sources have been exhausted it will be time to call on women to come forward in large numbers to enter production fields and do the work of men, said Mr. Knoeppel. At the same time it is believed advisable to proceed now to plan for the utilization of women when the need does come and to this end part of the questionnaire was devoted. It was agreed generally that women must be placed at lighter tasks than men and that provision be made to allow them best working conditions, as to cleanliness, light, ventilation, health supervision and social surroundings.

An important point made by Mr. Knoeppel is that unless sufficient ship capacity is provided to carry manufactured products to Europe there will be no need of the efforts of women for a long time. Without ample transport across the Atlantic, goods will pile up at eastern ports and render unnecessary a concentrated effort to produce more. Throughout his paper the author quoted liberally from the opinions of those who answered.

Many Women Employed

A RECENT announcement by the bureau of labor statistics reveals that 1,426,000 *more women are employed in the United States than at the beginning of the war. In industries the greatest increase is shown. These took* 530,000 *more women since* 1914, *but the largest proportionate increase was* 215,000 *additional women taken into government service. Since* 1914 *women have replaced* 1,413,000 *men. Industrial and government work have taken* 400,000 *women formerly employed in domestic service or in dressmaking.*

Harrington Emerson, consulting engineer, president of the Emerson Co., expressed the belief conditions are shaping themselves toward a readjustment of labor conditions after the war in which some backward steps will be taken. He believes the influences that have set back progress in Russia more than a generation are at work in this country as well and will be revealed at the close of the war. It is difficult, he says, for men to change from high wages and short hours to lower wages and greater effort. This will form a difficult problem in the readjustment and every man must make his own solution as conditions arise.

Mrs. Joseph T. Bowen, chairman of the women's committee of the council of national defense, Illinois division, outlined what women have done and are doing to help win the war. Miss Florence King, president of the Women's Association of Commerce of the United States, spoke on what women should do to help win the war. Mrs. Bowen presented a complete report of what is being done in organizing along various lines. The underlying purpose is to maintain an organization to meet whatever call is made by the government where women can aid. Selling Liberty bonds, obtaining food pledges, obtaining marine glasses and distributing coal are some means by which they have served already. Miss King made a plea for giving women equal opportunity with men to show their value and to accomplish ends for the good of all. With wider demand for their services, she says, women are taking more and more important parts in the business life of the nation and can do even more. She cites the desire of many women to serve in this crisis and their lack of proper guidance to show what best can be done by them.

Barton T. Bean, of San Francisco, suggested a plan for stabilizing labor and prices after the war by voluntary agreement. He has had experience under the food administration where the middleman has been eliminated, a set price being established for the consumer, the jobber and the retailer. This has done away with speculation and has given the market a stable basis. He believes the same method can be used in practically all products after it has been demonstrated under war conditions.

A. Russell Bond, managing editor of the *Scientific American,* pointed out that the returning soldier, even though disabled, will be able to direct machinery and aid in production. He cited the results of research to determine the value of machinery as an aid to man.

He found that while the multiplication of effective result by machines varies over a wide area, it is a safe conclusion that by the aid of machinery a man at present is able to do 10 times as much as a man a little more than 100 years ago. He believes that the laborer who operates a machine is not truly a laborer, the machine being the true laborer and the man the director. Therefore he likes the term director for the man who directs the machine.

In conclusion Mr. Bond said:

"But wonderful as all these machines are, not one of them is endowed with real intelligence. Men can produce a machine that will play chess but the machine cannot do its own thinking; it will only do what it has been designed to do. It will react to the various conditions to which it may be subjected, but it has no will of its own and no power of thought. No matter how far we may advance in the development of machinery we shall always come up against this barrier—the impossibility of producing brains. The most perfect of machines is useless without an intelligent operator. In the industries of the future, no matter how far they are advanced, operators will be indispensable, they will be required for their directive intelligence rather than their muscular power. Instead, therefore, of bewailing the fact, as men frequently do even in these enlightened days, that machines are replacing men, we must look upon the subject from a broader point of view and realize that machines are demanding men and that they are elevating man to a higher plane."

Gives Intensive Course

Ellis F. Muther, sales manager for the Gisholt Machine Co., Madison, Wis., explained the methods used by his company in training men to operate machinery in its own plant and in those of its customers. Briefly this is to give an intensive course of a few weeks in a school attached to the plant, which affords as much instruction as would be received in several years under ordinary shop conditions. The learner is in charge of a teacher, one learner to one teacher. He takes the machine apart and assembles it until he knows its makeup thoroughly. Then he learns adjustment and operation. Having qualified in this he, in turn, becomes a teacher of a learner and goes through the cycle a second time, with his position reversed. It is valuable that the man know how to teach others as it is that he can learn for himself. The second cycle of the course teaches him this. A similar course for educating for government service is suggested. Mr. Muther's address was illustrated by stereopticon views.

Securing Maximum Production

Securing the maximum production from the men remaining behind brought out many uggestions. Irving A. Berndt, manager of the betterment department of Jos. T. Ryerson & Son, Chicago, and secretary of the Society of Industrial Engineers, classified workers under war conditions into three groups: those in the fighting service; those working on war requirements; and those carrying on normal industrial activities. In a short time probably 2,000,000 men will be in actual military and naval service, the first group. It is said that four to six men are required in industry to keep one man at the front. Taking an average of five for this service it is necessary to have 10,000,000 persons in war production, the second group. With 30,000,000 workers normally engaged there are 18,000,000 remaining when the first and second classes have been deducted. The first group are doing their utmost. The second class must be inspired to give their utmost efforts and the third group of 18,000,000 is left to bear the burden formerly carried by 30,000,000, and must be trained to greater productivity and efficiency to meet the burden laid on them.

In this effort the industrial engineer comes into his own. Mr. Berndt says:

"Consider for an instant our ideal. For years our cry has been elimination of waste, reduction of waste effort, conservation of man power, and now those words save, conserve, produce and economize which were during those times the hobby of a few, the self-assumed problem and responsibility of a small group, are now the slogan of a nation, the motto in every household and the creed of each man and woman. Are we not well drilled and well equipped in our ideals?

"The old hire and fire method must be entirely wiped away. The foreman already burdened with more responsibilities than he can efficiently handle must no longer be permitted or expected to handle this function; unless he has had an opportunity to study each job and understand its requirements in the way of man power and ability and then has time to carefully consider each applicant and the ability to analyze his qualification how can he be expected to place men well. It is not possible for the foreman under average conditions to give these problems their proper attention.

"We must have more centralized employment departments concentrating on this problem, applying practical character analyses plans and making as scientific and practical an analysis as possible each man for each job.

The final day of the session was devoted to the consideration of after-war conditions, with particular attention to readjustments to take care of those returning, including the disabled.

Planning for Disabled Soldiers

Douglas C. McMurtrie, director of the Red Cross institute, New York City, gave one of the most interesting and practical talks of the conference. He is in charge of an experimental school in New York City where studies are being made to give experience in establishing schools for re-educating crippled soldiers on their return from the war. Much has been done along this line in England and France. The United States can start at an advanced stage to carry on this work. One of the most interesting features of this talk was presentation of a number of stereopticon slides showing what is being done in Europe and motion pictures illustrating the actual use of the wonderful devices to replace missing arms, hands and legs. Men were shown engaged in agricultural and industrial tasks, some with one arm missing and some with two. Mr. McMurtrie stated that in the past the crippled soldier could hope for little better on his return from the front than a pension, not sufficient to keep him but just sufficient to prevent him from using his efforts to earn a living, making him a dependent and perhaps a beggar. A few with sufficient character have managed to make their way in spite of the handicap, without assistance. "The same course has been followed in the past with industrial cripples," said Mr. McMurtrie, "but state compensation laws now have afforded a great deal of assistance toward better things."

"One of the things we will need most and probably will have difficulty in obtaining," said the speaker, "is the helpful attitude of the public which can make or mar our efforts. It is so easy to pity and help the crippled soldier. We all feel that we should do things for him since he lost his arms and legs in our cause. But the effect of this is to weaken the will-power of the cripple and leads inevitably to dependency and pauperism. The truest help is to awake in him the desire to help himself and to be independent. That will be one of our greatest endeavors and without it we will fail. If the soldier, stunned and disheart-

ened by his mutilation, cannot be made to see that there is a useful place for him and that there is much work he can do in comfort and with good results, thus supporting himself and and helping the country, our effort will be vain in many cases."

Business After the War

Willard E. Hotchkiss, director of business education, University of Minnesota, spoke on "Business After the War". He said in part:

"When it is maintained that the clue to business problems after the war is to be sought in the field of human relations rather than in the field of technical organization, it must be recognized at once that profound changes are sure to occur on the technical side. The extent to which mass production is being carried at the present time, the way in which manufacturing and assembling of parts is being segregated in different concerns, the changes in transportation, including the vast equipment for the production of shipping, and the possibility of serial transportation and communication—all of these things will tremendously affect the technical organization and will doubtless determine many of the lines in which business will develop.

"When we come to consider the way in which the various human factors will align themselves and the effect which this alignment will have upon future business development, we are, of course, in a much different realm, and one in which prophecy is extremely difficult. However, if present tendencies are to any extent indicative, there is one assertion which it seems comparatively safe to make, and that is that business policies are destined to be worked out with a very much larger participation of workers and of the general public than has been the case heretofore. By participation I do not here have primarily in mind participation in the actual determination, but first of what constitutes efficient business management and operation and second, how efficient management is to be secured.

"If we insist upon shutting our eyes to industrial forces which perhaps for the moment are disagreeable to contemplate, we shall almost surely have before us a painful process of disillusionment. For my part I do not believe that the difficulties of the employing class in adjusting themselves to the new forces arise primarily out of a desire to keep for themselves a larger portion of the industrial product. The greatest obstacle to a better adjustment in my opinion arises out of the viewpoint which is expressed by the oft-repeated assertion. 'I am willing to make any reasonable concession, but I must control my own business.' In this attitude of mind we have a clear distinction between purely economic and what I should call the psychological factors in the employer's side of the problem. We have the same thing on the employer's side when we make a distinction between a wider participation on the one hand and a more equitable distribution on the other.

Canada's Experience With Cripples

Norman A. Hill, general manager of the Carriage Factories, Ltd., Toronto, spoke along the same lines as Mr. McMurtrie on rehabilitation of crippled soldiers, with relation to what Canada is doing for her maimed who have been returning for months from European hospitals.

"Let us consider some actual statistics in round numbers, as follows: Canada has raised and sent abroad an army of over 400,000 and is raising an additional 100,000 under the compulsory service act. This army of 500,000 men is produced from a total population of but 7,500,000 and when one remembers that there are approximately 2,000,000 French Canadians who until affected by the draft came very far from doing their share, you can almost say that 500,000 fighting men were drawn from a population of not over 6,000,000 people.

"Now as to actual casualties, perhaps the greatest misconception is as to the number of soldiers made entirely blind. This percentage is approximately only one-eighth of 1 per cent of the 35,000 returned men of the Canadian expeditionary forces. This is remarkable, especially so, when prewar estimates on total blindness were placed at from 1 to 5 per cent. The next most surprising figure, at least to me, is that less than 4 per cent of the Canadian casualties are cripples classed as amputation cases, and when you remember that amputation cases include not only the loss of an arm or a leg but include as well even the loss of one finger this low percentage is also remarkable.

"Of all the invalided soldiers returned to Canada over 20 per cent are on account of disability due to disease, and of this 20 per cent not less than half are tuberculosis cases. These figures then would indicate that we need not look for a huge army of helpless cripples and blind when our soldiers have all returned from the front. One of the chief things in this course of reconstruction of men is to combat and overcome the habit of idleness, which is fixed upon them in the convalescent period, particularly if a man has been for some months in a hospital in England, and in all cases back of this, they have had the semi-idle life of the soldier in the field, which is generally brief periods of intense activity, and long periods of waiting, or comparative utter idleness."

Shifting the Manpower to Production

One of the interesting papers related to shifting manpower to emergency production, delivered by James O. Craig, president of the Business Men's Clearing House, Chicago. "Money, machinery and men are the three prime factors in solving the war problem," he said. "Money is plenty and is obtained in limitless quantities as the government needs it." Machinery is manufactured in immense quantities as it is needed and men form the greatest problem. To fit the man to the job and to find the man for the job, that the job may be well done but to avoid putting an executive into a minor position, thus losing the value of his services in a larger position, is one that stands high in the problem.

One source of loss is in the fact that many men hurried in the early days of the war to offer their services to the government in advisory capacities and now are situated in minor positions where their executive ability is lost and they are of little service, their work being such as could be done by a much less valuable man, while their real abilities are needed in production. Adjustments must be made to remedy this situation. There is need for an inventory of executive power and proper distribution to get the best results.

Montague Ferry, of the Armstrong Bureau of Related Industries, Chicago, argues for the development of team work to get best results in industry. He stated that only 60 per cent of labor is efficient in results and that 40 per cent is wasted or withheld. The three greatest wastes, he said, are labor turnover, strikes and withheld effort. Addressing himself to the latter he showed how team work, the awakening of a feeling of *esprit de corps*, among the men will eliminate much of this and gave instances where it had been aroused and excellent results had followed.

Lew R. Palmer, acting commissioner of the Pennsylvania department of labor and industry, told of the Pennsylvania plan for meeting afterwar conditions. Particular attention is being paid in this effort to planning for the proper assimilation of women into industry and the care of men returning from the war.

Capital and Labor Pact Formulated

Past Month's Conferences Result in Signing of Agreement to Place Ban on Strikes for Duration of War—National Mediation Board Proposed—Workers and Employers May Organize

DELIBERATIONS of perhaps the most important industrial conference ever held, which began in Washington Feb. 25, have resulted in the recent signing of an agreement between representatives of labor and capital for the duration of war. The salient features of the plan, which represents the best thought of capital and labor, are that there shall be no strikes or lockouts during the war; a recommendation that all industrial disputes be settled by a government mediation body; both workers and employers shall have the right to organize and women substituted for men must be allowed equal pay for equal work.

General Plan Outlined

The plan provides that there shall be no strikes or lockouts during the war and that workers may organize in trades unions and bargain collectively through chosen representatives while employers have the same right to organize in associations and to bargain collectively. Workers shall not use coercive measures to obtain members or in dealing with employers, and employers shall not discharge workers for membership in trade unions or for legitimate trade union activities. Where union shops now exist, these shall continue with the union wage scales and the continuance of the open-shop policy shall not be deemed a grievance. Safety first rules and regulations shall not be relaxed. When necessary for women to be employed in place of men, they are to be allowed equal pay for equal work and must not be allotted tasks disproportionate to their strength. The basic 8-hour day will apply in cases where the existing law requires it; in others, the question of hours shall be settled with due regard to governmental necessities and the welfare, health, etc., of the workers. Maximum production in war industries shall be maintained and practices on the part of either employer or employe, which operate to delay or limit production or which tend to artificially increase costs, shall be discouraged. A permanent list of skilled and other workers will be kept on file by the department of labor for rapid and effective distribution purposes. All workers shall have a living wage and fixation of wages, hours and conditions of labor, local conditions shall always be regarded and a minimum basis established.

For the settlement by mediation and conciliation of any controversy in an essential war industry between employers and employes, a government mediation body to be known as the national war labor board is proposed. Its functions would extend to industries indirectly affecting essential war production, and it is intended to provide machinery in industrial centers for such purposes by appointing committees or boards to secure settlements by local mediation and conciliation. This war labor board shall not take cognizance of any controversy in any field of activity where there is by agreement or federal law a means which has not been invoked.

These conferences, instigated by Secretary of Labor Wilson, have been continuous for a period of more than a month between the five representatives of employers and the five representatives of employes. The first group selected former President William H. Taft and the latter, Frank B. Walsh, formerly chairman of the federal commission on industrial relations, to represent the public. Representatives of employers included L. A. Osborne, New York, vice president of the Westinghouse Electric & Mfg. Co.; H. B. Worden, Newark, N. J., president of the Submarine Boat Corp.; W. H. Van Dervoort, East Moline, Ill, president of the National Metal Trades association; L. F. Loree, New York, president of the Delaware & Hudson railroad; and C. Edwin Michael, Roanoke, Va., president of the Virginia Bridge & Iron Co. The five representatives of labor were: Frank J. Hayes, Indianapolis, president of the United Mine Workers; William L. Hutcheson, Indianapolis, president of the Brotherhood of Carpenters; Victor Olander, Chicago, representative of the Seamen's Union; T. A. Rickert, Chicago, president of the United Garment Workers; and William H. Johnston, Washington, D. C., president of the Machinists' International Union.

Taft Praises General Spirit

At the conclusion of the conferences, ex-President Taft expressed himself as being gratified with the manifest self-restraint, tact and earnest patriotic desire of all in attendance to decide upon a most effective war policy. He said: "I believe the plan will work if it is administered in the spirit in which it was formulated and agreed upon."

Mr. Walsh likewise, in a supplementary statement, remarked: "The plan represents the best thought of capital and labor as to what the government's policy ought to be during the war with respect to industrial relations. It represents an industrial chart assuring maximum production to the employer while guaranteeing to the worker, a healthy growth of democratic principles as applied to industry as well as the highest protection of his economic welfare while the war for human liberty everywhere is being waged."

Labor Delegation to Sail

A delegation of nine American labor leaders with credentials of the American Federation of Labor will sail shortly for England and France to declare American labor's position with regard to the war. It is stated that the commission is sent in response to repeated invitations from French and British labor leaders. In the words of one of the members of the committee, its mission abroad "is not to tell labor of Great Britain and France what to do, but to tell them how American labor stands with regard to the war".

Will Aid Disabled

Pennsylvania as a state is formulating plans for rehabilitating its returning disabled soldiers and sailors. A state committee was recently appointed by Governor Brumbaugh, composed of the adjutant general as chairman, commissioner of health, commissioner of labor and industry and the executive secretary of the state board of education. It will study the problem in all its phases and will place all its facilities and co-operative bureaus at the service of the national authorities who are engaged in this work. Already offers of such co-operation have been filed with the surgeon general.

In the first three weeks of March, the conciliation division of the department of labor adjusted 24 strikes.

Sixth Increase

In Steel Plant Wages Means Aggregate of 95 Per Cent

Many independent steel companies have followed the United States Steel Corp. in granting a wage increase of 15 per cent, effective April 15, which is the sixth since Jan. 1, 1916. In the aggregate these advances represent approximately 95 per cent. As announced by Chairman E. H. Gary, wages of other employes than laborers will be equitably adjusted except in the cases of recent advancement. Railroad, coal mining and shipbuilding companies are not included. Chairman Gary said:

"It is rumored that some employers of labor have been discussing the adoption of an 8-hour per day base, and in view of this fact we have given careful consideration to this question and have decided against it.

"Extending over a period of many years we have been operating on an 8-hour basis in departments where the labor is unusually heavy and where the workmen and managers have both decided eight hours' work was most conducive to health and comfort; and we have also been putting into practice from time to time during the last few years an 8-hour day in most of our underground iron ore and coal mines. A little over 25 per cent of our total employes are on an 8-hour basis.

"The conclusions arrived at today as above stated, have been influenced largely by the reason that we believe the largest production will be thereby secured. This is always essential, and especially important in times like the present."

One Youngstown steelmaker recently made the statement that since the beginning of the war wages with the latest advance, have increased 153 per cent. In 1914 the day laborer rate was 15 cents and this last increase of 15 per cent brings it up to 38 cents.

Lake Fleet Smaller

Transfer of Vessels to Coast Cuts Ore Carrying Capacity

Removal of lake vessels to the Atlantic has materially reduced the carrying capacity of the Great Lakes fleet. Navigation on the lakes opens this year with a net loss of 16 vessels, 13 of which were taken over by the shipping board, while three were lost last year. These ships had a combined trip capacity of 59,500 tons, a total of 1,190,000 tons in an average season of 20 trips. Construction of vessels for lake service has stopped, the yards working exclusively on ocean steamers, so that there is no offset to these 16 ships.

A table prepared by M. A. Hanna & Co. shows that despite this loss the bulk freight fleet will be made up of 379 vessels with a combined trip capacity of 3,036,900 tons. For 20 trips the total is 60,738,000 tons Many of the ships make more than 20 trips a year, but the demands of the coal and grain trades will hold the ore carrying capacity down. Last year the trip capacity of the entire fleet was 3,113,200 tons.

The following table shows the number of vessels in each fleet together with their total capacity and average size:

	No. of vessels	Capacity per trip	Average size
Pittsburgh Steamship Co.	99	801,200	8,093
Interlake Steamship Co..	52	407,000	7,827
M. A. Hanna & Co.....	30	276,700	9,223
Hutchinson & Co.....	20	168,300	8,415
Great Lakes Stmshp. Co.	20	163,100	8,150
G. A. Tomlinson.....	17	136,500	8,029
W. H. Becker.....	17	132,400	7,788
Cleve. Cliffs Iron Co....	14	115,400	8,243
W. C. Richardson.....	14	104,700	7,478
Boland & Cornelius.....	13	101,600	7,815
Wilson Transit Co.....	9	72,700	8,077
Shenango Steamship Co..	5	58,200	11,640
Peiss Steamship Co.....	7	56,500	8,071
H. K. Oakes.....	5	49,800	9,960
John Mitchell	4	41,500	10,375
H. H. Brown & Co.....	4	38,200	9,550
A. T. Kinney.....	4	35,100	8,775
H. & G. M. Steinbrenner	4	32,700	8,175
D. Sullivan & Co.....	4	31,100	7,775
Davidson S. S. Co.....	8	31,000	3,875
Paisley S. S. Co.....	4	23,100	5,775
Morrow S. S. Co.....	2	11,200	5,600
C. O. Jenkins.....	3	24,900	8,300
J. J. Barlum.....	2	18,300	9,150
C. M. Bryson.....	4	16,400	4,100
Valley Camp S. S. Co...	3	12,100	4,033
M. B. McMillen.....	2	15,800	7,900
Brown & Co.....	2	15,200	7,600
H. L. Shaw.....	2	13,600	6,800
Wisconsin Steel Co.....	1	10,500	10,500
E. N. Breitung & Co...	2	8,800	4,400
R. M. Sellwood.....	1	7,500	7,500
J. Playfair	1	5,800	5,800
Totals	379	3,036,900	8,013

Obituaries

W. A. BUXTON, who organized the Perry, Buxton, Doane Co., Boston, dealer in scrap iron, steel, metals, etc., with branches in Chelsea, Lowell and Worcester, Mass., Providence and Pawtucket, R. I., Portland, Me., and Philadelphia, and who was its general manager until he retired in 1913 because of ill health, died suddenly March 29 at his home in Worcester, Mass. Death followed a stroke of apoplexy. He was 42 years old and for the past two or three years has been in business for himself in Worcester. He was widely known in the eastern metal market.

Sir Collingwood Schreiber, 87, who for 60 years was a prominent engineer actively identified with railway construction in Canada, died recently in Ottawa, Ont. He was knighted in 1915 in recognition of his public services.

William J. Harvey, aged 72, who founded and was president of the Harvey Spring & Forging Co., Racine, Wis., died recently as the result of injuries sustained by being struck by a motor truck. His three sons are members of the company.

William Hadwin Ames, son of former Governor Oliver Ames of Massachusetts and head of the Ames Shovel & Tool Co., died at his home in Boston recently, after a year's illness. He was 58 years old and at one time was president of the American Pneumatic Service Co.

A. E. Spooner, affiliated with the Brown Hoisting Co., Cleveland, for the past 32 years, for the past eight or 10 years as assistant chief engineer, died suddenly March 25, following an operation. He has been connected with the iron ore movement for many years and had specialized on machinery for handling that material.

Horace W. Willson, Worcester, Mass., who retired in August, 1913, after 56 years of service with the American Steel & Wire Co., died at New York recently, aged 79. He was one of the best known wire salesmen in the east. President W. P. Palmer commissioned him to write a history of the company.

Austin Clement, president of the Page Steel & Wire Co., Adrian, Mich., formerly the Page Woven Wire Co., died March 30, at Henrotin hospital, Chicago, after a long illness. He was born at Bridgewater, Vt., Sept. 19, 1842, removing to Chicago in 1867 and engaging in the clothing business. Since he retired from that industry in 1902 he has been identified with the steel business.

Richard Ward Baker, who spent his entire business life in the service of the Watson-Stillman Co., Aldene, N. J., manufacturers of hydraulic machinery, commencing at the age of 14, died recently at his home in Roselle, N. J., following a stroke of apoplexy. In 1914 he completed a half century's service on which occasion he was presented with a substantial check as well as engrossed resolutions embodying the company's appreciation.

Near Danger Line on Iron

British Blast Furnaces Unable to Provide Margin of Safety in Supplies—Government Steel Buying Remains Large

Bureau of The Iron Trade Review,
Prince's Chambers, Corporation St.,
Birmingham, Eng., March 20, 1918.

THE pressure for pig iron is keener than ever. The shortage of all kinds of raw materials becomes more serious every day. Scrap and pig iron are in very much the same category, and consumers of both have the greatest difficulty in keeping going; the supply leaves no margin and there is constant danger of a breakdown. The most urgent need of the moment is increased supply of hematite, although nearly every blast furnace is turning out all it can under present circumstances. Only a very limited quantity of hematite is alloted for making bessemer steel, open hearth getting a decided preference.

In the Cleveland district, substantial sales have been made on the monthly allotment for March. In that district, there is great scarcity, and everywhere the doling-out principle has to be applied. Stocks, in the old sense, in the north of England have long since disappeared. All midland smelters find increasing pressure, some of them no longer visit the Birmingham weekly meeting, as they have no iron to offer and no amount of pressure is able to stimulate either production or delivery. A significant feature is the appearance on the market of orders from foundries never before heard of in the Midland pig iron business. These consumers get no response whatever, unless they are able to produce an order from the ministry of munitions backing their claims. A general effect of the scarcity is extreme difficulty in getting any kind of special iron involving unusual analysis. A great deal of this business is for the present, in suspense. The greatest pressure appears to be for foundry material, the shipbuilding industry, in particular, calling for enormous tonnages of engine and machine castings.

Ore Scarcity a Factor

The scarcity of ore is causing much concern at South Staffordshire blast furnaces. The immediate cause of this is a scarcity of trucks. The usual practice at these furnaces is to calcine the ore in the open yard, in the neighborhood of the furnace, and fairly large dumps of raw ore are always kept ready for calcining; but latterly these accumulations have reduced in size, and great pressure is being put upon the mines to speed up supplies. In several occasions lately the scarcity of trucks has involved periods of idleness for the mines. The government now is speeding up discharges of cargoes, with the result that some little improvement in the truck supply has been effected. Owing to the scarcity, Manchester consumers who have been in the habit of getting their pig iron from Derbyshire latterly have bought, a portion of their supplies from Cleveland, which costs about 6s ($1.44) more per ton by the time it reaches the foundry, while there is much more uncertainty of delivery.

The government is still a good buyer of finished iron and steel. In the nonferrous department, there are numerous reports of slacking off in the supplies of cartridge metal, and various descriptions of brass and copper, but nothing like this has yet taken place in connection with iron and steel. The government is still ordering in large quantities practically every description of iron and steel made in British workshops.

It is believed, however, that, but for the shipbuilding situation, some slackening off in demand must have ensued in view of the long spell of quiet that has existed on the western front, and the vast supplies of munitions known to have accumulated. Among the busiest lines are black sheets and light strip used for aeroplane work and automobile construction, and wire.

Price Advances are Wanted

But, for the time being, the price question is uppermost. The strongest representations have been made to the ministry of munitions to add something to the 2s 6d (60c) recently given on unmarked bars. But the department is so far quite obdurate, and makers appear to have made up their minds to suspend their application for the present. In the meantime, all iron is being marked to bring it within the marked bar price category, and all sorts of extras are being charged, which the consumer is only too glad to pay. For some reason, the black country manufacturer has found it possible to send rather better supplies to the merchants' warehouses, where consignments were urgently wanted. The result has been the clearing off of fairly large arrearage of business particularly with country buyers and consumers of iron. Makers of billets are still negotiating with the government with a view to an increase in the price which for a long time past have been selling at £10 7s 6d ($49.80). This figure is considered absurdly insufficient in view of the recent advance of 12½ per cent in wages.

While labor unrest has been allayed by the recent advance in wages, the military withdrawals of men cause concern. The "combing out" operations at certain works are vigorously pursued, but the strongest efforts will be made to retain the working staffs at their present strength.

Plate Plant

For Canadian Government Will be Located at Dominion Works

Toronto, March 30.—The construction of a plant for rolling steel plates, angles, etc., the output of which will be sufficient to meet the demands of the shipyards of the dominion for some years to come, will be started immediately at Sydney, N. S., as the result of an arrangement completed between C. C. Ballantyne, minister of marine and fisheries and the Dominion Iron Steel Co., Ltd. A plant will be erected capable of turning out 150,000 tons of ship steel annually. The company will receive orders for its product from the Canadian government and also will be free to fill private commercial orders. The plant will entail an expenditure by the Dominion Iron & Steel Co. of from $3,000,000 to $5,000,000 and will be ready for operation in from 15 to 18 months. No direct financial aid is being given by the dominion government toward the construction of the plant.

The Fort Moody Steel Works is planning to remove the machinery from its present rolling mill to a new plant to be erected at Rocky Point, B. C. The city council of Port Moody has agreed to facilitate the movement of the plant and render what assistance it can toward securing government assistance for extensions. The plant now in use is located unsatisfactorily for its present purposes, but will be retained and operated as a cast steel foundry, nut and bolt works. The company will shortly install a 6-ton, 3-phase electric furnace in the old plant and also proposes to install a similar furnace in its new plant.

The Wellston Iron Furnace Co., Jackson, O., after June 1, expects to produce at its furnace pig iron with a phosphorus content under 0.075 per cent.

Plate Mills Put Under Pressure

Shortages in Emergency Fleet Corporation's Requirements in Addition to Steel-For-Ships Deal With Japan Intensifies Demand Upon Mills—Further Negotiations With Japan May Increase Plate Tonnage Greatly

WASHINGTON, April 2.—Plate mills now bear most of the burden of the shipbuilding problem, according to opinions here, following the demand of the Emergency Fleet corporation for increased shipments, the announcement of the war trade board of a plates-for-ships deal with Japan and the expected entry of the railroad administration in the market for steel for cars and locomotives. Coming on the heels of the coke shortage and the transportation tieups, the demand likely will be most keen for the next month.

The shipping board blames the shortage of steel for the failure of deliveries of new ships to meet expectations. It is claimed that 20 ships of 162,200 tons were completed in March, but that 30 hulls, of 232,786 tons, were launched, 12,000 tons more than had been expected. It is likely that priority orders will be issued giving the shipping board's steel requirements preference.

Big Tonnage is Wanted

In addition to the entry of the Submarine Boat Corp. in the market for 100,000 tons of fabricated steel, there is an order from F. T. Bowles, assistant general manager of the Fleet corporation, that mills during April must make up a shortage of 50,000 tons of plates booked for the Hog Island shipyard. Both of these tonnages are on top of the war trade board's arrangement by which Japan is to get 100,000 tons of plates, deliveries to begin in May and to continue through the third quarter.

The Japanese agreement provides that the United States is to get 12 ships, of approximately 100,000 tons deadweight capacity, in exchange for steel. The purchase of the ships and the buying of the steel are to be separate transactions. They interlink, however, as far as the barter for ships, which we need, and the steel, which Japan requires, is concerned. The deliveries on steel are to be made against delivery of the ships, ton for ton, according to the war trade board.

The announcement says:

"Arrangements have now been made, as a result of the negotiations between the United States and Japanese shipbuilders, for the purchase of 12 Japanese ships of approximately 100,000 tons deadweight capacity, which will be added to the fleet of the United States shipping board within the next few months. All of the vessels are large modern steamers, of 6000 tons or over, with one exception, and none over two years old. Some indeed are still awaiting completion. Deliveries of the ships at American ports are to begin not later than May and to be finished in September, a progressively higher price per ton to be paid according to the month of delivery as a premium on early deliveries.

"In return for the sale of the ships the war trade board has agreed to deliver to the Japanese shipbuilders a corresponding amount of steel for shipbuilding, ton for ton against delivery of the ships.

"Further negotiations are in progress to secure from Japanese shipbuilders 200,000 additional tons of new construction, the ships to be built in return for new steel placed at the disposal of the builders by the war trade board. Recent editorials in such papers as the *Jiji Shimpo of Tokio* show an encouraging disposition to regard the furnishing of tonnage for allied war needs in the light of a patriotic contribution to allied war purposes and with this spirit prevailing, a quick and satisfactory result from these negotiations is hoped for."

Under the export license system of the war trade board, Japan has been getting a less tonnage of plates than before the system became effective, but her imports of sheets and structurals have been larger. In January lowing table shows exactly what tonnages of plates, sheets and shapes have been licensed for exports to Japan in the last eight months, with comparison of last year.

	Plates		Sheets		Shapes	
Mth.	1918	1917	1918	1917	1918	1917
Feb.	8,402	12,486	8,996	1,071	5,385	3,247
Jan.	10,096	16,210	5,054	3,204	5,334	4,410
	1917	1916	1917	1916	1917	1916
Dec.	17,098	8,465	8,600	3,240	6,805	2,733
Nov.	21,659	9,410	2,320	480	5,628	5,350
Oct.	32,484	10,624	3,656	124	2,953	2,928
Sept.	28,738	8,790	3,296	47	3,739	3,378
Aug.	32,023	12,356	2,325	300	3,122	3,112
July	22,821	6,014	2,296	311	290	1,072
8 mo. total	167,026	84,358	36,538	8,359	33,256	26,030

Few New Capital Issues Approved by Board

Washington, April 2.—The capital issues committee of the federal reserve board, which has been passing upon the war importance of new financing while congress has been debating the war finance corporation bill, which likely will become a law this week, has approved only five new industrial issues, involving $7,850,000, of 11 submitted with a total of $19,200,000. The committee has, however, passed favorably upon 22 refunding issues which involve $98,850,900, making a grand total of $106,700,900 fully approved and $11,350,000 curtailed.

The capital issues committee has given no explanation of the applications, showing which were for steel and machinery manufacturers, but has announced that public utility applications, for $144,296,400, received favorable attention in all cases except one, which was for $3,000,000. Of the $141,296,400 approved, $118,640,000 was for refunding, leaving $22,656,400 in new issues sanctioned. Of the municipal issues considered, only $6,379,000 was disapproved and of the $31,660,000 allowed, only $15,831,912 was for refunding.

Summed up, the committee's work shows $300,386,752 in applications considered, with 32 per cent of the applications approved, 54.7 per cent of refunding issues sanctioned, 8.3 per cent disapproved and 5 per cent curtailed. Of the new issues, exclusive of refunding, 69.3 per cent of the amount involved was formally allowed. This aggregates $46,334,940.

Conferees on the war finance corporation bill last week compromised on the amount of turnover allowed in the bill, accepting $3,000,000,000 in lieu of the $4,000,000,000 passed by the senate and favored by Secretary McAdoo and the $2,000,000,000 passed by the house. It is believed generally that the conference report will be accepted by both houses and that the bill may be finally enacted this week.

If the bill passes as agreed upon in conference, it will capitalize the corporation at $500,000,000. The corporation will be managed by five directors, one being the secretary of the treasury, and the other four serving at $12,000 each annually. The bill also provides for a capital issues committee composed of seven members, the salary of each to be $7500. The four directors and the seven committeemen are to be appointed by

the President and confirmed by the senate.

The bill provides 125 per cent security be given, based on the value of the assets of the borrower; that the war finance corporation cannot make direct loans greater than 10 per cent of its capital stock to any one borrower except railroads or that it approve any indirect loan for more than 12.5 per cent of the total capital stock and authorized bonds.

Urge Uniform Standards on Steel Castings

Washington, April 1.—Recommendations that uniform specifications for steel castings be agreed upon by the various departments of the government, recently were embodied in a report by a committee of Steel Foundry Society of America, composed of L. E. Thomas, of the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., chairman; W. D. Sargent of the Bayonne Steel Castings Co., Bayonne, N. J., and A. G. Field, of the Wheeling Mold & Foundry Co., Wheeling, W. Va. This action of the society is in the interest of speeding up deliveries and is intended to eliminate, if possible, the differences between the specifications issued by the various bureaus of the government. Some of the bureaus which now pursue divergent standards are the bureau of steam engineering, bureau of construction and repair, ordnance department, etc. The report of the steel castings producers to the government suggests that benefits may be derived by the adoption of uniform specifications along the lines of those proposed by the American Society for Testing Materials under which the inspection could be made by any government inspector who happens to be in the shop regardless of the bureau by which the purchases were made.

Embargo on Pig Iron Cuts Export Shipments

Washington, April 2.—That only essential export shipments of pig iron are being made from the United States, their necessity being measured in terms of their contribution to the prosecution of the war, is indicated in the fact that in February only 10,540 tons of pig iron were licensed for export. This figure is little more than one-half of the January exportation and little better than one-fifth of the amount shipped out in February, 1917. This is the smallest amount exported in any month since the European war began.

Italy, which a year ago received 8450 tons, last February was to receive consignment of only 1734 tons. England's 10,778 tons in 1917 fell to 2950 tons, while shipments to Canada a year ago reached 13,401 tons and this year amounted to only 4327 tons. France's 11,353 tons and Cuba's 55 tons dropped to zero in February. Other countries were licensed to receive only 1529 tons in February as against 4981 tons last year.

The sweeping effect of this embargo on pig iron may be seen in the eight months' total. February export of pig iron made the total for the period 309,207 tons as compared with 576,000 tons in the eight months ending in February, 1917. The last eight months have nearly doubled the export volume of the corresponding period in 1916, when the total was only 171,708.

Study of the relationship of pig iron exports and pig iron production shows the export quantity is becoming negligible. In February pig iron exports amounted to only 0.45 of one per cent of production. In February, 1917, exports amounted to 1.8 per cent of production and in January this year the relationship was 0.85 of one per cent. In January, 1917, the ratio was 2 to 1 per cent. The December 1917 and 1916 export totals amounted to only 2.3 per cent and 3.3 per cent respectively.

The following table shows the monthly total of export shipments for the eight months ending March 1.

Month	1918	1917	1916
February	10,540	49,018	15,016
January	20,581	69,146	19,319
	1918	1917	1916
December	66,573	105,195	21,827
November	25,733	106,781	24,551
October	47,200	92,756	21,212
September	44,287	64,122	29,222
August	62,038	60,264	18,667
July	32,368	28,718	21,869
Total	309,207	576,000	171,708

Capital Odds and Ends

WASHINGTON, April 2.—W. C. Kendall, manager of the car service section of the railroad administration, has asked the railroads to inaugurate the "sailing day plan", if possible, as a means of saving cars and expediting less-than-carload shipments. The plan is in effect on several roads and has proved successful. On the Pennsylvania railroad 600 cars have been saved daily. The New York Central railroad reports an average saving of 21,305 cars a month. The New York, New Haven & Hartford railroad reports as saving 780 cars a week. The Boston & Maine figures a saving of 354 cars a week since adopting the plan. The Buffalo, Rochester & Pittsburgh railroad has effected a decrease of 41 per cent in cars used.

* * *

President Wilson has authorized opening 88,685 acres of land in the former Ft. Peck Indian reservation, Montana, for entry under the homestead laws. Coal deposits on the land are reserved to the government.

* * *

The Alsen Portland Cement Co., Alsen, N. Y., with a capital stock of $2,400,000, entirely enemy-owned, has been assigned to Alien Property Custodian Palmer, who has named directors for it.

* * *

Carriers have asked cancellation of rates on ore and ore products from Chicago, Peoria, Ill., and related points to Sheldon and Hawarden, Iowa; and from points east of the Missouri river to Sioux City, Iowa, and Sioux Falls, S. Dak.

* * *

The Cleveland, Cincinnati, Chicago & St. Louis railroad requests cancellation of the carload rates on zinc oxide from Hillsboro, Ill., to points in Pennsylvania, New York, West Virginia, Ohio, Indiana and Michigan.

* * *

The interstate commerce commission has ordered the rail and lake class commodity rates applicable from the trunk line territory to and through Lake Michigan and Lake Superior ports, to be set aside. These rates wer to be effective from April 4.

* * *

The complaint of the Chicago Bridge & Iron Works, Greenville, Pa., against the Erie and other railroads was dismissed, the interstate commerce commission finding the rates charged on fabricated steel articles used in railroad water tank and tank tower legally applicable.

* * *

Reparation in the sum of $407.36 for overcharges collected by Morgan's Louisiana & Texas Railroad & Steamship Co. and others on four carloads of relaying steel rails shiped from Macland, Ga., to Whelen, Ark., has been awarded McDonald Bros., Helena, Ark.

* * *

The Isaac Joseph Iron Co., Cincinnati, scrap dealer, has been awarded $115.14 reparation for excess charges on a shipment of scrap iron from Cordele, Ga., to Lebanon, Pa. The complaint was filed against the Pennsylvania, Seaboard Air Line and other railroads.

* * *

Applications will be received at any time by the civil service commission for examination for the following positions in the war department: Engineer of tests of ordnance material, assistant engineer of tests of ordnance material, and inspector of machinery and machine tools.

Expect Extension of Fixed Prices

Railroad Supplies in Which Government Has Direct Interest as Sponsor for Transportation Interests Probably Will be Included—Price Committee Declares Continuous Hearings Not Meant to Interfere with Institute's Work

WASHINGTON, April 2.—The scope of government activity in naming prices on steel products likely will be extended before July 1 when the quotations which became effective yesterday for another three months, again will be subject to revision. This new field of prices will include railroad equipment material, such as rails, axles, wheels, etc., which the war industries board has not touched in any of its price negotiations and which the American Iron and Steel institute itself left out of its promulgation of maximum base prices on which the President has not placed his direct approval.

The railroad administration is now compiling a list of prices of steel products, including cast as well as rolled material, from which it will work when it starts making the tremendous volume of purchases it has under consideration. To keep the distribution of this steel in harmony with the other steel orders being allocated daily through the office of J. Leonard Replogle, director of steel supply, of the war industries board, it is altogether likely the board's price committee will pass upon the railroad purchase prices and ask the President to make them official.

Won't Usurp Institute's Function

This is the only immediate question affecting steel which is said to be waiting attention of the war industries board. The offer of that board, made through its price committee chairman, R. S. Brookings, when the steel men met the board March 20 and 21, to always be at the call of the steel industry's usual representatives, was misinterpreted by several of the manufacturers who attended the conference. They took it to mean that the committee intended to usurp the duties now performed by the American Iron and Steel institute. H. E. Ingels, secretary of the board said such was not the case.

Chairman Brookings of the price committee, when the question was raised relative to continuing the prices for a period longer than three months, said his committee would be sitting almost continually and would be glad at any time to take up any questions which the industry would like to have settled. This was understood here to mean, and has been so stated by Secretary Ingels, that the industry, through the institute, can submit any problems it cares; it was not a general invitation to any individual manufacturer or group to present individual complaints. The board is too busy for such proceedings, it is held.

The new committee, whose action on steel prices was the first official matter before it, feels it should be allowed to get more into the swing of its work before it should be asked to commit the government and the steelmakers to the present prices. It wants to have time to consider the cost figures to be presented from time to time by the federal trade commission, which now has representation on the committee. Because of the committee being in the position where it has its fingers on steel costs at all times, it is believed here that Chairman Brookings' offer was to make the steel men feel they are free at any time to go before the board. Formerly steel conferences were only on invitation of the board. The new offer is a blanket invitation.

While the railroad administration and the war nidustries board are considering the advisability of fixing the prices on railroad steel, the institute is engaged in revising some of the prices contained in its list of maximums recommended to the trade and accepted generally by the industry and the government. Some of these revised prices will be higher to meet the satisfaction of some manufacturers and others will be lowered to conform to more general approval of government purchasing officers. It is believed this special revision, to be announced fully in a statement by the institute's price committee later, will be generally satisfactory.

The navy apparently has receded from its position to force acceptance by the war industries board of the maximum prices recommended by the institute. This is particularly true since the navy has been given direct representation on the price-fixing committee. It is understood here now that all government departments will recognize the recommended maximum prices as they do those officially approved by the President. In confirmation of this it is indicated that the war industries board has convinced the navy and other purchasing departments that the President's announcement of steel prices Nov. 5, 1917, really accepted the recommended prices, even before the trade's maximums were promulgated. That announcement said:

"The iron and steel manufacturers have agreed promptly to adjust the maximum prices of all iron and steel products other than those on which prices have been agreed upon, to the same general standard as those which have been announced. It is expected that this will be done promptly and consistently in line with the basic, intermediate and finished products, for which definite maximum prices have been established."

Assurance has been given by members of the war industries board to individual steel manufacturers that the board by all means wants the full co-operation of the industry as given through the American Iron and Steel institue's subcommittees. The board, limited for power except as agreed in several instances with members of the President's cabinet, fully appreciates the services of such an organization as the institute. The co-operation enjoyed before section 3 of the food control bill became effective was keenly missed while the status of the council of nation defense's subcommittees was in question. The members haven't forgotten that and have endeavored to keep the steel committees on friendly terms with the war industries board.

Adds More Ovens

The Indiana Coal & Coke Co., Terre Haute, Ind., has contracted with the H. Koppers Co., Pittsburgh, for the erection of 15 Koppers by-product coke ovens, together with the necessary additions and changes to the plant to accommodate this increase of capacity. The present plant consists of a battery of 30 ovens. The new addition is so arranged that a second addition of 15 ovens readily may be made. With the increased capacity, approximately 800 tons of coal per day will be used. The surplus gas from this plant is used for domestic purposes in the city of Terre Haute. The coke produced is marketed for domestic and metallurgical uses.

Men of Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

W. G. WILCOX, who from November, 1914 to Jan. 31, 1918, was with the Massena, N. Y., works of the Aluminum Co. of America, as assistant superintendent, has been made advisory engineer of the Powdered Coal Engineering & Equipment Co., Chicago. After graduating from Syracuse university in 1906 and from Wisconsin university in 1909, he had charge of research work at the latter institution for two years and then served as research chemist for the National Carbon Co., Cleveland, from 1911 to 1913. Prior to his connection with the Aluminum Co. of America he was production engineer with the Cleveland Electro-Metals Co., Cleveland, in 1913 and 1914.

Thomas Crabtree has resigned as treasurer and superintendent of the Majestic Mfg. Co., Worcester, Mass.

Frank A. Hayes has been appointed chief engineer of the Willys-Overland, Ltd., Toronto, Can.

G. K. Hawkey has resigned as manager of the Cleveland offices of the W. F. Davis Machine Tool Co.

Frank S. Reitzel has been made first vice president of the Wright-Martin Aircraft Corp., New Brunswick, N. J.

J. B. Howell, formerly of the sales department of the Bound Brook Oil-Less Bearing Co., Bound Brook, N. J., has entered army training at Camp Dix.

E. G. Sears, formerly sales manager of the W. F. Davis Machine Tool Co., with offices in New York, has been put in charge of sales from the Cleveland office.

R. S. Carter, formerly district sales manager at Pittsburgh has been made sales manager in charge of twist drills and reamers of the Whitman & Barnes Mfg. Co., Akron, O.

H. C. Thomas has resigned as assistant general superintendent of the Illinois Steel Co., at Gary, Ind., a position which he held for the past eight years, having been advanced from chief chemist and metallurgist.

H. I. Arnold, formerly with the Pierce Arrow Motor Car Co., Detroit, has accepted a position as supervisor of the planning and standards department of the Cadillac Motor Car Co., Detroit.

A. V. Magnusen has become actively affiliated with the molding machine department of the Davenport Machine & Foundry Co., Davenport, Iowa. He has been connected with the molding machine industry for more than 20 years.

Joseph R. Hague has resigned from the sales force of the Independent Pneumatic Tool Co., Chicago, to associate with the pneumatic tool division of the Knox-Andresen Co., Empire building, Philadelphia. The latter company recently accepted the selling agency in the Pittsburgh district of the Keller Pneumatic Tool Co., Grand Haven, Mich.

Paul R. Ketzer, formerly manager of the Ketzer Machinery Co., Philadelphia has become manager of the engineering and machinery department of the W. H. Robinson Co., with which has been consolidated the Ketzer Machinery Co. The new company will conduct a domestic and export business from offices in the Real Estate Trust building, Philadelphia.

A. B. Morrison Jr. and Earl E. Adams have recently become sales engineers for the Smith Gas Engineering Co., Lexington, O. The former has been with the Fort Wayne Electric Works and the Rathbun-Jones Engineering Co., and more recently with the John H. McGowan Co., at Philadelphia. The latter for some years had charge of gas producer work for the Power & Mining Machinery Co., and lately was sales manager in the powdered coal department of the Bonnot Co., Canton, O. He will be located at the Smith company's new plant at Dayton.

James E. Sague was recently appointed vice president of the Worthington Pump & Machinery Corp., New York, in charge of engineering and manufacturing. He has appointed William Goodman as his assistant and William Schwanhausser as chief engineer, both at New York. Neil C. Lamont was made works manager of the Laidlaw works, Cincinnati. Leon P. Feustman was appointed vice president in charge of general commercial affairs, including contracts, prices, purchases, traffic, etc. Frank H. Jones has been made vice president in charge of sales; he has appointed Edward T. Fishwick general sales manager and Charles E. Wilson the latter's assistant, with headquarters at New York.

Franklin E. Bassett, New Britain, Conn., has resigned his position with the Hartford Machine Screw Co., Hartford, Conn., to accept the sales managership of the Worcester Machine Screw Co., Worcester, Mass., a subsidiary of the Standard Screw Co. Mr. Bassett takes the position left vacant by the resignation of William E. Gifford, who has joined the Liberty Screw Co., Worcester, Mass.

Ira C. Rogers, formerly general purchasing agent for the Worthington Steam Pump Co., at New York, has recently been appointed general manager of W. R. Keene & Co., New York. W. R. Keene & Co. represent the Bay State Tap & Die Co., Mansfield, Mass., Alvord Reamer & Tool Co., Sterling Products Co., Keene Twist Drill Co. and Massey Vise Co. Mr. Rogers formerly was with W. R. Keene & Co.

J. Hilpertshauser, formerly manager of the machine shop of the Globe Foundry & Machine Co., Sheboygan, Wis., has been elected president to succeed John Henry Optenberg, founder of the Optenberg Iron Works, Sheboygan, Wis., who resigned to retire from active business. Mr. Optenberg has been president and general manager since the works organization in 1884. He will endeavor to recover his failing health in another climate.

William T. Price has been made president of the P-R Engine Co., Inc., New York City, with offices in Philadelphia, Baltimore and Toledo, O., and second vice president of the Rathbun-Jones Engineering Co., Toledo, which will undertake the manufacture and sale of Price-Rathbun stationary and marine oil engines, built in accordance with principles developed by Mr. Price. He formerly was manager and chief engineer of the oil engine department of the De La Vergne Machine Co.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM G. CLYDE, recently elected to succeed Col. Henry P. Bope as vice president and general manager of sales of the Carnegie Steel Co., assumed his new duties on April 1. His career in the steel industry has been most interesting. Mr. Clyde was born in Chester, Pa., and was educated at the Pennsylvania Military college. After he was graduated, he became affiliated as civil engineer with Ryan & McDonald, Baltimore, contractors. He remained there seven months and resigned to become associated with Robert Wetherill & Co., Chester, machinists and founders. His next position began his experience in steel, as ingot tracer for the Wellman Steel & Iron Co., Thurlow, Pa. He then became a roller in that company's 132-inch plate mill and soon was promoted to the plate mill superintendency. After two and a half years with the Wellman company, Mr. Clyde became superintendent of plate mills in the south works of the Illinois Steel Co., South Chicago, Ill., where he remained for six years. He was then appointed district sales manager of the American Steel Hoop Co., establishing a branch office in Philadelphia. He continued in this capacity until the company was merged with the Carnegie Steel Co. After a sales service of three years in the Cleveland office of the Carnegie company, he was transferred to Pittsburgh to become assistant to Colonel Bope. For the past 13 years he has been assistant general manager of sales in charge of the bar, hoop and band division.

WILLIAM G. CLYDE

Charles L. Wood, formerly assistant to Mr. Clyde, succeeds him as assistant manager in charge of bar, hoop and band sales. He was born in Youngstown, O., and attended Ohio State university, graduating with a class in mining engineering to become a chemist with the Calumet Furnace Co., Chicago. Reversals forced the Calumet company to shut down and Mr. Wood then pursued mining engineering in Colorado and other western districts. In 1898, he became affiliated with the American Steel Hoop Co., and was placed in charge of the order department when the company moved to New York. Upon its consolidation with the Carnegie Steel Co., after the formation of the United States Steel Corp., he was transferred to the sales department of the former company. A thorough knowledge of the bar and hoop business gained for him the appointment as an aid to Mr. Clyde when the latter became assistant general manager of sales in charge of that department. Mr. Wood held this position until his present promotion. His successor is Samuel R. Hoover.

James A. Campbell, president of the Youngstown Sheet & Tube Co., left recently for a two-weeks' vacation at Hot Springs, Va.

A. C. Norborn resigned recently as president of the Pennsylvania Shipbuilding Co., Gloucester, N. J. Charles H. Moyer also resigned as vice president recently.

Herbert Longstaff has been made manager of the St. Louis office located in the Boatman's Bank building of the Asbestos Protected Metal Co., Pittsburgh.

Robert M. McGregor was elected a director of the Nova Scotia Steel & Coal Co., New Glasgow, N. S., at the recent annual meeting to succeed his father, the late James D. McGregor, who was vice president and director since the company's organization. D. C. Jackling, New York, and M. Hinckley Smith, Philadelphia, were elected directors increasing the board to 16.

C. A. Morse was chosen president of the American Railway Engineering association at its recent Chicago meeting. He is chief engineer of the Chicago, Rock Island & Pacific railroad, Chicago.

CHARLES L. WOOD

Herman M. Griggs, Cleveland, has been appointed manager of the new coal and ore exchange. He will direct the movement of coal in 1918 from Cleveland and other northern Ohio ports to the upper lakes and the northwest. Before taking charge of the Cleveland coal pool in 1917, Mr. Griggs was coal and coke agent for the New York Central railroad.

Griffith Coit is general purchasing agent of the Chester Shipbuilding Co., Ltd., and of the Merchant Shipbuilding Corp., agent of the Emergency Fleet Corp. of the United States shipping board. His headquarters are in the Finance building, Philadelphia. It was incorrectly announced that he was purchasing agent for the American Shipbuilding Corp.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

HORTON PENROSE will on April 10 assume the duties of assistant to President J. N. M. Shimer of Shimer & Co., Pittsburgh, sales agents for the American Manganese Mfg. Co., operating furnaces at Dunbar, Pa., and for the Atlantic Ore & Alloys Co. Mr. Penrose has been resident manager of the Pittsburgh branch of Shimer & Co., for a number of years prior to his recent promotion. He has been in the Pittsburgh office since 1901, when it was opened by L. & R. Wister & Co., which subsequently was taken over by Shimer & Co. F. G. Schultz, one of the salesmen in the Pittsburgh office will succeed Mr. Penrose as Pittsburgh district manager.

J. R. Dunsford, who has been sales agent for the American Steel Foundries, has become affiliated with the Wheeling Mold & Foundry Co., Wheeling, W. Va., in a similar capacity.

Herbert F. Black, after a visit of two weeks in Pinehurst, N. C., resumes his duties as assistant to the president of the Cambria Steel Co., with offices in the Oliver buildig, Pittsburgh.

W. J. Lynch has resigned his position with the Standard Tin Plate Co., Canonsburg, Pa., to accept the appointment of general manager for the Mahoning Valley Steel Co., Niles, O.

James A. Fayne, affiliated with Hornblower & Weeks, Boston, bankers, has been elected a director of the United Alloy Steel Corp., to succeed John W. Prentiss of the same firm, who has resigned.

W. B. Champ, who has been secretary and treasurer of the Hamilton Bridge Works Co., Hamilton, Ont., for several years, was elected managing director to succeed R. M. Roy, deceased. Arthur Martin, Hamilton, succeeds him as treasurer.

Whiting Williams has been placed in charge of welfare work of the Hydraulic Pressed Steel Co. Headquarters are on the fourteenth floor of the Illuminating building. Mr. Williams was formerly secretary of the Cleveland Welfare Federation and resigned from the group insurance department of the Equitable Life Assurance Society to accept his new position.

James L. O'Neil resigned recently as credit manager of the Carnegie Steel Co., Pittsburgh, and will be succeeded by L. F. Payne on May I. Mr. O'Neil will be vice president of

HORTON PENROSE

the Guaranty Trust Co., New York City.

Charles E. Downton has been made superintendent of labor at the plant of the Atlantic Shipbuilding Co., Portsmouth, N. H., having resigned a position of that character with the New England Westinghouse Co., Chicopee, Mass.

Pope Yeatman, recently made head of the nonferrous metals department of the war industries board's raw materials division, was presented with the gold medal of the Mining and Metallurgical society at the University club, New York, at a recent dinner.

W. E. Watson succeeds George E. Day as director of the Continental Supply Co., a subsidiary of the Youngstown Sheet & Tube Co., Youngstown, O. Mr. Day was general sales manager of the latter company for more than 10 years and has been called to Washington to head the department in the oil division of the fuel administration devoted to supervising the "production, distribution and allocation of tubular goods and oil well supplies."

J. G. Esch, civil engineer, who has had many years of experience in structural steel and reinforced concrete construction, has been made general manager of H. Schmitt & Son, Milwaukee, general contractors and builders.

Walter H. Allen has become affiliated with the Taylor-Wharton Iron & Steel Co., New York. He formerly held an important position in the track department of the Pennsylvania Steel Co., Steelton, Pa., and more recently was connected with the Maxwell Motor Co.

George Higgins has become affiliated with the auditor's department of the Liberty Steel Co., Warren, O. For many years he was paymaster of the Youngstown plant of the Sharon Steel Hoop Co., and its predecessor, the Youngstown Iron & Steel Co.

William Breeden, sales agent at Philadelphia for the Lackawanna Steel Co., Buffalo, has been made chairman of the Liberty bond iron and steel section committee of Philadelphia. Other members are Howard Wood of the Alan Wood Iron & Steel Co., and G. Theodore Schnatz of the Lukens Steel Co.

Frederic Bonnet Jr. has resigned as professor of chemistry at the Worcester Polytechnic institute, Worcester, Mass., after occupying that position for five years, to become chief chemist at the new plant of the Atlas Powder Co., now under construction in Perryville, Md. He is an expert in sanitation work.

Charles E. Sanders succeeds Lewis M. McCallum as secretary of the Parker Wire Goods Co., Worcester, Mass., since the latter resigned to become affiliated with M. S. Brooks & Son, Chester, Conn. Mr. McCallum remains on the board of directors. Mr. Sanders is president and treasurer of the Stenman Wire Specialty Co., Worcester.

Iron and Steel Men in War Machine

J. B. Bonner, Vice Chairman, Subcommittee on Steel Distribution

JAMES BERNARD BONNER is playing such an important part in the present war that its history will not be accurate nor complete unless his effort is duly recorded. That, briefly, sums up official Washington's view of the man through whom the iron and steel industry today has its closest contact with the government's war machine. And the officials in Washington who express this view, naval and army officers alike, mean to see that Mr. Bonner's services are recognized as soon as the war is over.

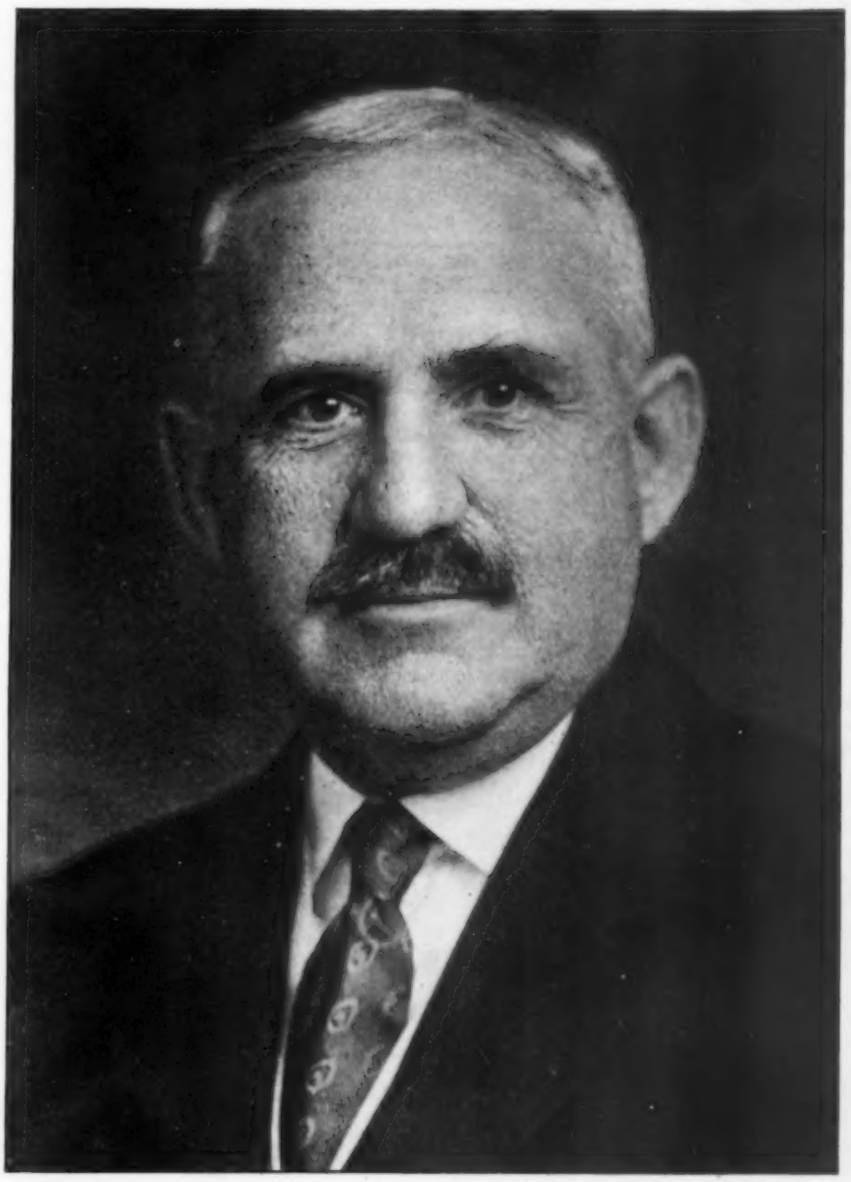
Mr. Bonner is vice chairman of the American Iron and Steel institute's subcommittee on steel distribution, with headquarters in Washington in the Wilkins building. In private life he is the Philadelphia district sales manager of the United States Steel Corp. Since he has taken up this part of the institute's work, steel men have come in contact with him as they never had before. And almost every one of them has praise for Mr. Bonner, whose staff in Washington, originally three or four, has been expanded to meet the war requirements and now numbers more than two dozen.

"Ask Bonner."

That phrase, used in connection with steel matters, is more universally employed in the national capital than any other. If the navy department wants to know when to look for deliveries on boiler tubes, they ask Bonner. If the army wants to know where to get projectile steel, they ask Bonner. If the shipping board is hunting for ship plates, they ask Bonner. So it is all along the line.

Everywhere in Washington it is believed that Mr. Bonner has done more for the government than any other steel man. This continual reference to him, even with the government's own steel division at their beck and call, is not confined to junior army and navy officers. Rear admirals, interested in the naval program, ask his advice. Major generals, deeply concerned in rushing steel "over there", seek him out. Even Secretary Daniels himself is known to have contributed to the praise of Mr. Bonner's work. Many have expressed their opinions privately and are only waiting opportunity to do so publicly. A look at the pictures on the wall in Mr. Bonner's private office gives some idea of the men who hold him in high esteem. Among them are Admiral Benson, General Goethals, Admiral Taylor, and Sec. Daniels.

Mr. Bonner's standing with these men has not grown up with the war. His intimate knowledge of government requirements has come through at least 15 years of close contact with various federal officers and army and navy specifications as well as the regulations and the laws affecting government purchases. The committee has been in operation about one year and under Mr. Bonner's supervision, orders for several million tons of steel have been distributed.



Copyright Harris & Ewing

JAMES BERNARD BONNER

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Midvale Adds to Capital Resources

ALTHOUGH at times during the past year, Wall street failed to support the shares of the Midvale Steel & Ordnance Co. as firmly as it did some other industrial securities, the company's annual report just issued in pamphlet form for 1917, shows the company to be in an extremely strong financial position. Like other leading steel producers, Midvale made a large provision for federal taxes, yet it added substantially to its capital resources. Its net earnings from operations and investments amounted to $71,405,775, out of which it charged $25,731,910 for federal taxes and $6,826,421, a total of $32,558,331. After payment of bond interest and other charges, it showed net income of $35,576,558, equal to $17.12 per share for the $100,000,000 capital stock of $50 par, compared with $16.11 per share in 1916. Out of total earnings for the two years of $33 per share four quarterly dividends, the first on Feb. 1, 1917, were paid, amounting to $6 a share, leaving $27 a share in undivided earnings. This surplus is equal to 54 per cent of the $100,000,000 capital stock. The consolidated statement of income for the year 1917 follows:

	1917	1916
Net earnings	$69,838,254	$36,718,819
Other income	1,567,522	887,198
Total	$71,405,776	$37,606,017
Other charges	407,939	188,904
Int. and guaran. div.	2,862,946	2,396,625
Balance	$68,134,891	$35,020,488
Premiums	.....	754,512
Total	$68,134,891	$35,775,000
Taxes	25,731,910	.....
Dep. and mineral exh.	6,826,421	3,560,276
Balance	$35,576,558	$32,214,724
Dividends	12,000,000	.....
Surplus	$23,576,560	$32,214,724
Prev. surplus	18,656,610	1,441,886
Adjustment	131,826	.....
Total surplus	$42,364,996	$33,656,610
Special deprec.	.....	15,000,000
Approp. surplus	903.434	.....
P. & L. surplus	$41,461,560	$18,656,610

The balance sheet indicates clearly Midvale's increase in financial strength as a result of additions to its capital. On Dec. 31, 1916, its current assets were $76,985,915, against current liabilities of $17,603,304, leaving net working capital of $59,382,611. On Dec. 31, 1917, current assets were $109,791,758, while current labilities were $37,593,811, of which over $25,000,000 was the allowance for federal taxes, leaving net working capital of $72,199,947. Cash on hand Dec. 31, 1918, amounted to $18,833,078, as against $11,828,916 at the end of 1916. Marketable securities including United States certificates of indebtedness, amounted to $27,590,196, comprising another item of the current liabilities. The consolidated balance sheet follows:

ASSETS

	1917	1916
Property acct.	$158,909,900	$135,708,933
Invest. in other comp.	508,929	649,772
Cash	18,833,078	11,828,916
Customers' accts.	20,807,785	14,531,893
Sundry debtors	.....	618,047
Advance pay.	4,342,081	6,221,167
Bills and loans receiv.	1,460,245	8,987,384
Market. secur.	*27,590,196	1,375,821
Invent. fair cost	36,758,371	33,422,686
Deferred charges	763,399	867,562
Sinking fund cash	125,329	.....
Insurance fund assets	.....	633,251
Total	$270,099,316	$214,845,433

LIABILITIES

Capital stock outst.	$100,000,000	$100,000,000
Minority int. in sub.	2,033,450	4,126,851
Cambria Iron Co. guaranteed stock	8,468,000	8,468,000
Funded debt	57,908,000	54,877,000
Vouchers unpaid pay.	7,310,415	5,490,405
Deposits on contr.	477,739	7,902,650
Sundry creditors	.....	2,151,506
Accruals payable	†29,412,532	1,728,529
Bills and loans pay.	393,124	330,213
Depr. and mine exh. reserve	14,200,319	8,039,553
Misc. and contin. res.	4,512,723	3,074,114
Special surplus	‡3,921,451	.....
Surplus	41,461,561	18,656,610
Total	$270,099,316	$214,845,433

*Includes United States certificates of indebtedness.

†Mostly taxes.

‡Surplus applicable to minority stock interests, etc.

Chairman William E. Corey and President A. C. Dinkey in their remarks to stockholders, said in part:

"The action of the government in establishing prices in September, 1917, has been a disturbing factor; not so much on account of the fact of regulation but because most of the factors entering into the cost of manufacture have not been, and apparently cannot be, limited by the same authority. Notwithstanding the difficulties of adjusting business to these new conditions, your company, in common with all of the steel companies of the country, has given its earnest and loyal support to the government authorities in their endeavor to formulate a workable plan whereby a maximum output would be secured, together with fair prices to consumers of steel products.

"The war taxes have had a marked influence on trade, especially during the latter part of the year. Business men generally have had to face the fact that, while their balance sheets might show a highly profitable year, tax obligations could not be met with such assets as—accounts of solvent customers, inventories, or property accounts. As an inevitable result there has been and will continue to be a liquidation more or less drastic in order to convert these assets, so necessary to a going business, into cash, as the federal taxes, due in June, 1918, must, of course, be paid in cash or equivalent government securities. In order to accumulate the large cash reserves necessary to meet this obligation, which, in the national aggregate, is probably the largest payment due on one date in all human history, it has been necessary for the officers to conserve the cash resources of your company in every possible manner, even to the postponement of improvements and extensions, which under normal conditions would have been made.

"In October, 1917, the minority stock of the Midvale Steel Co., which was in the hands of the public, was acquired by your company and the company was enabled thereby to immediately therefater carry into effect the plans which it had under consideration from its organization for the taking over of the properties of the Midvale Steel Co., Worth Bros. Co., and Wilmington Steel Co., thus making your company an operating company. This result is expected to effect greater efficiency and economy of operation.

"Furnace and mill operations, during the last quarter especially, have been seriously hampered by lack of transportation facilities. The regular movement of coal and coke was particularly affected, so that in spite of the fact that the company has its

own coal mines and cars, the output of the blast furnaces and mills has been seriously curtailed.

"While it is a source of gratification to know that in the great crisis through which our company is passing, your company is an important source of supply for munitions of war, it is proper to state that materials used exclusively for war purposes, that is, armor, ordnance, shells, etc., but not including ordinary commercial products such as are used in shipbuilding and rounds for shells, constituted only 12.83 per cent of the total business for the year 1917.

"Under existing conditions, it would be futile to attempt to make any forecast of business conditions during 1918. The controlling factor will be the ability of the railroads to provide men and equipment to handle the raw materials to, and the finished material from, your works."

The Midvale Steel & Ordnance Co. shares at present are quoted about 45, the par value of the stock being $50. Late in 1915, shortly after the company began to do business in October, the shares sold on the curb market as high as 98½. For 1916 the high on the same market was 77½. In 1917, when the stock was listed on the New York stock exchange, the high price was 67½, touched in June. In some quarters the weakness in Midvale shares at various times has been ascribed to the public's conception of the stock as a "war baby". In this connection the management's statement that 12.83 per cent of the 1917 output was comprised of materials used exclusively for war purposes is of significance.

Gulf States Make Gains

A gain of $418,969 in profits was made by the Gulf States Steel Co., Birmingham, Ala., in 1917 the total net earnings amounting to $2,871,479. After paying preferred stock dividends, a balance of $2,666,936 remained for the common, equal to more than $32.70 per share, or 32.7 per cent on $8,139,200 common, compared with 30.2 per cent in 1916. The year's surplus was $1,792,748, which added to the previous surplus brought the total to $4,449,297. Reservation of $1,000,000 for federal taxes was made. The comparative income account follows:

	1917	1916
Gross profits	$4,199,925	$2,650,006
Depreciation, reserve	1,328,448	197,496
Net profits	2,871,479	2,452,510
Surplus after divs.	1,792,748	1,772,683
Previous surplus	2,656,549	883,866
Total surplus	4,449,297	2,656,549

Shipments of steel by the company last year totaled 176,949 tons, compared with 155,147 tons in 1916. Of last year's deliveries 73,250 tons were sold to domestic consumers, while 105,699 tons went abroad.

Among the salient features of the company's business in 1917, according to the report issued yesterday, were the completion and operation of by-product coke ovens and the acquisition of additional coal reserves. The coking coal reserves at the end of the year were estimated at 11,000,000 tons and iron ore reserves amounted to 125,000,000 tons.

Wheeling Has Fine Year

Net profits in 1917 for the Wheeling Steel & Iron Co., according to a pamphlet report just issued, were $4,037,911, after making all allowances and deductions, including $150,000 interest on bonds and $4,058,874 for income and excess profits taxes. The company's total income from operations and dividends with interest on investments, was $8,840,101. Dividends paid during the year included $966,108 in cash, or 13 per cent on the outstanding capital stock and $1,209,090 stock dividends, or 20 per cent. Surplus for the year totaled $3,071,803, while the total surplus carried to balance sheet was $6,205,569. The value of 1917 shipments was $27,964,341, as compared with $15,073,530 in 1916. President Isaac M. Scott in the statement to stockholders which accompanied the report predicted that 1918 profits in the steel industry will be considerably lower than the prevailing rate in 1917.

Net earnings	$8,551,519
Dividends, interest, etc.	288,582
Total income	$8,840,101
Deprec., exhaustion of min., etc.	4,593,315
Excess profits, taxes, etc.	4,058,875
Net profit	$4,187,911
Interest on bonds	150,000
Surplus	$4,037,911
Cash dividend	966,108
Net surplus	$3,071,803
Previous surplus	4,372,846
Total surplus	$7,444,649
Stock dividend	1,239,080
Surplus carried	$6,205,569

Coke Oven By-Products

Spot

Per Gallon at Producers Plant	
Pure benzol	$0.35 to .40
Toluol	(nominal)
Solvent naphtha	.18 to .22
Per Pound at Producers Plant	
Phenol	$0.52 to .55
Naphthalin	.10 to .12
Per 100 Pounds at Seaboard	
Sulphate of ammonia (nominal)	$5.40 to 5.50

Contract

Per Gallon at Producers Plant	
Pure benzol	$0.35 to .40
Toluol	nominal
Solvent naphtha	.18 to .22
Per Pound at Producers Plant	
Phenol	nominal.
Per 100 Pounds at Seaboard	
Sulphate of ammonia	nominal

Large Increase

In Demand for Ammonium Sulphate for Nitrating Purposes Expected

New York, March 30.—Although the amount of sulphate of ammonia now being devoted to the manufacture of nitrate of ammonia for the government requires considerably less than 10 per cent of the output great increases in the demand for this purpose are expected soon. The large new nitrating plant at Baltimore, which is to be completed shortly, alone wil consume huge quantities. As a result of the increasing requirements of the government, producers are slow to adopt a policy with reference to contracts covering the needs of fertilizer manufacturers and other consumers over the coming year. Numerous consumers already have attempted to get themselves under cover. Contracts originally scheduled to expire in May and June in most cases will require at least a month or two longer to fill. The only sales now being made, with the exception of quantities sold under the authority of the government to makers of nitrate of ammonia, are made up of spot carloads around $5.50 per 100 pounds, tidewater.

Blanks, for the use of toluol consumers in making applications for their requirements, have been prepared by the committee of the war industries board of which C. A. Moorhead is chairman. Consumers will be asked to return this data and it is considered likely that some toluol will be available for release to the applicants within the next two or three months. In the meantime, all toluol not called for by old contracts, continues to go to plants making trinitrotoluol for the government.

Market activity this week involved principally benzol and solvent naphtha, but no abnormal quantities figured. Pure benzol continues to be quoted at 35 to 40 cents per gallon. The market lacks firmness. Solvent naphtha still is quoted at 18 to 22 cents per gallon but is exceedingly strong. Demand for phenol is restricted to spot lots which are going at 53 to 55 cents per pound. Demand for naphthalin continues far in excess of producer's capacity. Prices nominally are at 10 to 12 cents per pound.

The annual statement of the Canada Foundries & Forgings, Ltd., shows profits of $695,586, compared with $659,852 for 1916. The net surplus available for dividends was $585,874 and the surplus balance was $374,674. The total balance carried forward was $1,128,281.

Increased Shipping Steadies Exports

February Loss in Outgoing Iron and Steel Shipments Much Less Than in January —Semifinished Material Moving Freely—Pig Iron Shortage Reflected by Reduced Total—Machinery Volume Shrinks

SHIPMENTS of iron and steel products from the United States during the month of February fell off only 10,252 tons, or approximately 2.3 per cent compared with the tonnage for February, 1917. Advance figures just issued by the bureau of foreign and domestic commerce show exports of these products during the second month of the year reached a total of 438,848 tons, as against 449,100 tons in February, 1917. Comparing January, 1918 and 1917, the loss was 113,224 tons, or 18.6 per cent. This would indicate that the scarcity of shipping space available for the movement of iron and steel products during the last few months was somewhat relieved in February. It is probable, however, that with the licensing system fully in effect, these shipments will again show a decline in the month of March.

IRON AND STEEL EXPORTS, GROSS TONS

	February,		Eight months ending February,	
	1918	1917	1918	1917
Scrap	310	28,174	26,499	165,055
Pig iron	10,540	49,018	309,207	576,000
Steel billets, ingots and blooms	173,272	131,566	1,358,519	1,221,527
Wire rods	11,799	5,544	138,016	89,715
Steel rails	35,586	46,153	289,717	422,343
Steel bars	63,579	44,544	421,529	509,593
Iron bars	5,002	2,904	36,016	42,039
Struc. iron and steel	18,680	28,306	171,472	229,121
Hoops, bands and scroll	4,510	2,673	40,722	28,644
Sheets and plates	51,580	40,656	527,403	379,393
Tin and terne plate	18,564	14,631	142,507	142,589
Barbed wire	6,282	16,460	118,689	247,444
All oth. wire	11,639	12,138	122,585	167,958
Cut nails	233	167	3,182	3,320
Wire nails	8,698	5,707	84,947	90,900
Wood screws	193	.....	2,085	.....
All oth. nails incl. tacks	748	1,988	9,850	11,930
Pipes & fit'gs	14,863	13,441	132,593	172,826
R. R. spikes	367	2,639	11,299	12,866
Bolts, nuts, rivets and washers	2,086	1,714	21,472	19,652
Horseshoes	189	161	7,727	3,078
Cast radiators	128	516	2,208	2,140
Total	438,848	449,100	3,978,244	4,538,133

The extreme shortage of pig iron which is being felt so keenly in this country is reflected in the falling off of foreign shipments . Exports of this commodity for February, 1918, amounted to only 10,540 tons, compared with 49,018 tons in February, 1917, and 20,581 tons in January, 1918. Scrap exports also continue at the very low rate which has been noted during the past few months, February, 1918, showing a total of 310 tons, while in February, a year ago, the exports amounted to 28,174 tons.

The principal gain in tonnage was made in exports of semifinished material, with shipments of 173,272 tons, compared with 131,566 tons in February, 1917. This tonnage was somewhat less than the January figure of 195,385 tons, but the loss is partly due to the fact that February is a shorter month. Steel bar shipments of 63,579 tons, while not as large as the January movement of 73,772 tons, showed a good gain over February, 1917, when shipments amounted to 44,544 tons.

A comparison of the tonnage exported during the 8-month period ending with February shows a loss in 1918 of 559,889 tons, the 1918 and 1917 totals being 3,978,244 tons and 4,538,133 tons, respectively.

The valuation of iron and steel products products shipped to foreign countries during the month of February was placed at $78,087,483, which is $7,502,088 less than the February, 1917, valuation of $85,589,571. Although the tonnage exported during the 8-month period decreased, the valuation increased, owing to the higher prices received for iron and steel products. For the eight months ending, February, 1918, exports totaled $778,357,754, an increase of $136,160,685 over the total of $642,197,069 for a similar period in 1917.

Machinery exports fell more than $6,000,000 in value from the January total and nearly $700,000 from that of February a year ago. The total value of machinery exported in the eight months ending with January reached $189,902,943 as compared with $165,459,441 in the corresponding period in 1917. That eight months' total exceeded 1916 by nearly $60,000,000 and 1915 by $110,000,000. Of the $190,000,000 worth of machinery shipped abroad in the last eight months, $40,533,806 represented the value of metal-working equipment. This figure is nearly $15,000,000 less than the value exported in the same eight months last year. A sum of $3,108,431 represents February's exports, compared with $6,642,827 in February, 1917, and $5,504,954 in January this year.

The volume of machinery exports month by month since last June and the totals of each class for the eight months ending with February, is as follows:

Metal-working machinery: February, $3,108,431; January, $5,504,954; December, $4,650,325; November, $4,800,472; October, $5,983,070; September, $7,165,709; August, $4,585,206; July, $4,700,639; eight months' total $40,533,806.

Lathes: February, $592,398; January, $1,425,315; December, $1,656,906; November, $1,083,449; October, $1,787,379; September, $2,371,629; August, $1,621,168; July, $1,559,834; eight months' total $12,125,078.

EXPORTS, GROSS TONS.

1916	Pig iron	Semi-finished material
Jan.	19,319	55,315
Feb.	15,061	87,406
Mar.	19,439	107,674
Apr.	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
Aug.	60,264	160,921
Sep.	64,122	163,104
Oct.	92,756	162,669
Nov.	106,781	120,883
Dec.	105,195	162,901
1917		
Jan.	69,146	183,636
Feb.	49,018	131,566
Mar.	69,629	193,469
Apr.	44,783	162,209
May	61,112	168,158
June	81,999	192,133
July	32,368	112,085
Aug.	62,083	189,083
Sep.	44,287	148,932
Oct.	47,200	204,724
Nov.	25,733	150,120
Dec.	66,573	204,555
1918		
Jan.	20,581	195,385
Feb.	10,540	173,272

Machine tools other than lathes: February, $752,355; January, $1,048,511; December, $1,013,442; November, $914,841; October, $961,216; September, $1,006,481; August, $785,685; July, $769,435; eight months' total, $7,259,966.

Sharpeners and grinders: February, $328,879; January, $662,849; December, $489,768; November, $514,408; October, $669,108; September, $765,492; August, $406,670; July, $442,042; eight months' total, $3,950,337.

All other metal-working machinery: February, $1,434,799; January, $2,368,279; December, $1,490,209; November, $2,287,774; October, $2,565,367; September, $3,022,107; August, $1,171,683; July, $1,929,328; eight months' total, $15,434,747.

Machinery: February, $18,039,364; January, $24,178,146; December, $30,051,092; November, $25,128,024; October, $28,488,426; September, $27,947,134; August, $19,518,161; July, $18,208,429; eight months, total, $189,902,943.

March Marks Transition Period

Complete Assimilation of Existing War Work Through Distribution of Sub-Contracts, Supplies Steady Machine Tool Demand—Increased Production and New Undertakings of Size Are in Sight

WITH production of lighter war equipment rounding into shape, March has witnessed a direction of attention to the heavy ordnance program which is impending. The supplies of rifles for the equipment of the first army of a million and a half men are in sight under existing contracts and are expected to be ready by the first of June. The Browning gun orders were distributed early in the month among those existing manufacturers whose equipment is suited to rifle production. The operations of rifle making in a measure are similar to those involving the production of the Browning guns, although the heavy type Browning requires a number of new machines. Shells for the lighter ordnance have been assimilated. Plants throughout the east and as far west as Ohio were hard at work upon light guns and projectiles up to 6-inch in size.

Legislation Indicates Trend of Wants

THERE has been pending in congress an urgent deficiency bill carrying $400,000,000 for heavy ordnance which includes guns and shells up to 16 inches in size. This prospective construction will require an immense number of heavier tools, and the allotting of contracts is awaited with interest. The saturation of the eastern centers with the earlier war orders indicates that a wider distribution of this new business will obtain. Those manufacturers in the central states who are in position to handle this class of work have anticipated the receipt of orders in some cases to the point of obtaining options on tools for delivery conditional upon receiving contracts. A further indication of the tendency to give a wider distribution to the impending ordnance work is indicated in the plan of the war department to create 10 munition zones, each under a director who will be responsible for all contracts under his supervision. This system is compared with the zone plan of handling contracts at present in effect under the shipping board where excellent results are said to have been obtained. This decentralization is expected to expedite present work as well as to aid in placing new contracts.

Western Contracts Go Forward

DURING March many manufacturers through Ohio, Indiana, Michigan, Wisconsin and Illinois have directed their energies into channels which produce war materials. Those centers engaged in automobile work have received contracts or sub-contracts for airplane, motor, gun carriage, recoil mechanism, fuse and grenade parts, except in a few notable instances where heavier shells and gun tubes have been awarded. There are notable exceptions to these conditions where a complete warmaking device has been allotted to one manufacturer. The Ford plant for the construction of antisubmarine craft complete is an example of this sort of undertaking. This plant was commenced in March under a 75-day time limit. In much of the sub-contract work existing equipment has been converted to war service, but replacements and supplementary tools have furnished a steady demand. Used tools have not been forthcoming to supply the demand except in some instances where highly specialized machines have become available due to completion of contracts for 75-milimeter shells.

Several large contracts have been entered upon and others are under consideration which will furnish large tool requirements. The Studebaker Corp., Detroit, was awarded a contract for heavy projectiles early in the month; Dodge Brothers Co., Detroit, and the Willys-Overland Co., Toledo, O., were successful in securing ordnance work, and all of these concerns required additional machine equipment. Trucks and airplanes have entailed a heavy increase in motor construction during the last few weeks, and these taken with the growing tractor business have furnished a heavy burden for the manufacturers of gas engines. During the latter portion of the month shipyards have been added to the list of users of internal combustion engines. It was reported that the Winton Engine Works, Cleveland, has received a contract for 150 diesel engines for use on the heavier type of motor ship projected on the Pacific coast. In the east, also, an increased activity in motor manufacture is noted.

Shipbuilding Adds New Business

WITH the progress of the senate inquiry into the affairs of the shipping board, it has become apparent that new shipyards and additional facilities added to existing yards would result. Several yards are in immediate prospect and will furnish a demand for a number of miscellaneous machine tools and for various types of cranes. Labor shortage in the neighborhood of existing yards and harbor or launching facilities have induced a number of the proposed yards to seek locations along the southern seaboard or the gulf.

Will Double Production

DURING the latter part of the month, a new angle has developed which indicates a tremendous impetus to the machine tool demand in the near future. Coupled with the impending heavy ordnance work which has hung fire practically during the entire month, has come an increasing pressure towards increased production in all lines of war material manufacture. As an added spur the German drive, checked and awaiting a return smash by the allies has caused a heavy destruction of all sorts of equipment and the sapping of existing stores of munitions. These factors unmistakably spell redoubled effort on the part of American manufacturers. Foresight would indicate that despite the repeated attention which is directed to the "neck of the bottle", the present shipping facilities which are none too adequate, that production must go on, and must increase tremendously. This portion of the problem must be solved by the tool manufacturer and the government contractor, and other sources must supply the answer to the question of getting them across. At the present time it is being confidently asserted that 100 per cent increase in production of trucks, munitions and all classes of ordnance must be attained. The difficulties attendant upon securing this increase, and the demand which will be placed on the machine tool industry are apparent to those dealers who have handled the tremendous inquiries of the past months.

Will Require Doubled War Output

Urgent Needs in All Classes of Munition, Ordnance Supply and Motor Truck Manufacture Will Require 100 Per Cent Increase in Existing Shop Capacity—Sub-Contracts Furnish Steady Equipment Demand

URGENT needs abroad for all classes of ordnance, munitions, transport facilities and supplies have been rendered more acute by the destruction incident to the German drive. It is becoming increasingly apparent that America must step into the breach with a maximum production in practically every line of equipment and supplies necessary at the battle front. It is stated that these considerations are back of a contemplated effort to speed up and increase war production to practically double what it is at the present time. Manufacturers are being urged individually to expend extra effort and to increase their productive powers, but except in few cases the actual obtaining of additional machines has been left with the manufacturer. In cases where the need has been particularly urgent the government has exercised influence in obtaining needed tools and in remote instances has put in operation the power to commandeer and allot machines where urgently needed. Whether under the impending amplification of effort this will be increasingly evident is open to conjecture, but the tendency is apparent. Coupled with the heavy ordnance program which is taking shape slowly, the drive for increased production is expected to furnish a demand unprecedented in the machine tool trade. That new work will be distributed westward is becoming increasingly evident from activities throughout Indiana, Ohio, Michigan, Wisconsin and Illinois. The redistribution of orders with a constantly growing list of subcontractors continues until practically every machine shop finds need for some class of added equipment. This furnishes a steady demand. The crane market remains quiet with only occasional inquiries, following the rather heavy demand furnished by the government for navy yard and construction work abroad. An added impetus is expected in view of the continuing formation of new shipbuilding companies, a number of which are in the preliminary stages at this time.

New Buying Forecasts Ordnance Work

THE purchase of tools by the various departments at Washington is comprising the bulk of current business in the eastern machinery market. Much of this buying, which is being done quietly, is in anticipation of the government's proposed program for the production of heavy ordnance. A large number of tools needed for this work, including engine lathes, turret lathes, drilling machines, millers, etc., are for delivery not later than May 1. Perhaps the latest inquiry to come out from Washington is that involving about 15 miscellaneous tools for the government proving ground at Aberdeen, Md.

Industrial Demand Continues Light

Demand from industrial sources at this time is comparatively small. Included in new inquiries to come before this market is that of the Southern Valve Gear Co., Knoxville, Tenn., calling for three planers, three shapers, four steam hammers, three slotters, five lathes, two boring mills, three drills, two grinders and a few other tools. The Federal Shipbuilding Co., 54 Dey street, New York, continues to place orders for a few machines. Fred T. Ley & Co., New York, contractors in charge of the construction of a new munitions plant, are expected to be in the market shortly for a considerable amount of equipment. The Trenton School of Industrial Arts, Trenton, N. J., will need a few tools for a boatbuilding shop. The Singer Mfg. Co., New York, has recently closed on additional tools, principally lathes, for its plant at Elizabethport, N. J. A New York commission house recently has closed on a number of tools for shipment to the Orient, principally to China.

An advance of 10 per cent has just gone into effect on precision bench lathes, and a similar advance is to go into effect on April 15 on hand screw machines. As previously noted, an increase of 10 per cent has been made in the price of sensitive drills and 20 per cent on a line of shapers. These advances are attributed to increases in the wages of skilled labor.

Industrial expansion in the east continues of fair volume. Preliminary plans are being drawn for a $3,000,000 power plant at Goat Island, Niagara Falls, N. Y., for the New York state reservation committee. The J. D. Taylor Construction Co., Syracuse, will build a $35,000 addition to the foundry of the Ames Iron Works, Oswego, N. Y. The Fowler Mail Co. will build an addition to its plant at Buffalo. It is understood that the American Shipbuilding Corp. will build a plant at Quincy, Mass., for the construction of wooden ships. The Edgemoor Iron Co., Edgemoor, Del., has awarded a contract for a $75,000 addition to its plant.

Crane Demand Slumps Following Government Bids

The crane market is dullest in several weeks. Although a fair amount of business is pending, the volume of current business is small. At present, in addition to the large number of cranes for eastern yards on which the government took bids a couple of weeks ago, there are four electric cranes pending for the Mare Island navy yard, two of 15 tons and two of five tons capacity. Bids on these cranes will be received by the navy department on April 9. It is reported that a Pittsburgh concern recently was given a contract for a 30-ton crane for the Washington navy yard. The Chile Exploration Co. in addition to the three 20-ton travelers recently inquired upon for export, is in the market for four 5-ton handpower cranes. The American Power & Light Co., 71

AGATHON STEELS
TRADE MARK

Physically, Agathon Steels are as near perfect as the most improved methods of steel making the world has ever known can make them.

But no small part of the credit for Agathon physical perfection belongs to the artisans who make Agathon Alloys.

These men, with the superlative Agathon standard ever in mind are keeping Agathon quality "away up there."

The Central Steel Company
Massillon, Ohio

Detroit Office—326-27-28 Ford Bldg.
F. Walter Guibert, District Representative.
Cleveland Office—Hickox Bldg.
The Hamill-Hickox Company, District Representative.
Chicago Office—1370 People's Gas Bldg., 122 So. Michigan Blvd.
C. H. Beach, District Sales Manager.
Philadelphia Office—603 Widener Bldg.
Frank Wallace, District Sales Manager.
Syracuse Office—601 University Block.
T. B. Davies, District Sales Manager.
J. E. Dackendorff & Co., 20 Broad St., New York. General Export Agents.

AGATHON
Alloy Steels

AGATHON STEELS

AGATHON Nickel Steels
AGATHON Chrome Nickel
AGATHON Chrome Steel
AGATHON Chrome Vanadium
AGATHON Vanadium
AGATHON High Carbon
AGATHON Special Analyses

Broadway, New York, is inquiring on one 40-ton electric crane and one 2½-ton electric bucket crane for the powerhouse of the Texas Power & Light Co., at Dallas, Tex. The Braden Copper Co., New York, is inquiring for additional conveying equipment. The Thompson-Starret Co., New York, will buy a 15-ton handpower crane for a powerhouse to be erected at the government's explosive plant in Charleston, W. Va. The company originally inquired for electric cranes of larger capacity. The Baldwin Locomotive Co., Philadelphia, still is in the market for two 50-ton travelers. The Interborough Rapid Transit Co., New York, is inquiring for a 3-ton handpower crane for a substation. The Pennsylvania railroad recently closed on 336 1-ton jib cranes for the American expeditionary forces in France. The New York Airbrake Co., 165 Broadway, New York, has placed a contract for a 5-ton traveler with the Northern Engineering Works, Detroit.

Normal Demands Continue Steady at Chicago

MANUFACTURERS of munitions, tractors and gas engines, as well as some agricultural implement manufacturers, are supplying practically all the demand at present received by Chicago machine tool dealers. Exclusive of these classes of requirements there is considerable demand for single tools from general users. Manufacture of government requirements seems to have been contracted and subcontracted until it has entered the activities of almost all machine tool users and most of them find need for further equipment to handle the business thus demanded. No large new projects are being undertaken, but a number of concerns already equipped for munition work are enlarging their facilities, some even doubling their capacity. This is bringing in some business. Deliveries are becoming somewhat better on the part of manufacturers. Dealers find difficulty in obtaining cars for moving tools from this center and this is hampering their efforts. The Standard Steel Car Co. continues to buy for its new munition plant at Hammond, Ind. Government arsenals are speeding up and tracers are out conferring with manufacturers to expedite delivery of equipment now on order for these plants. The Green Engineering Co., East Chicago, Ind., is building a foundry in connection with its plant. The Ruby Furnace Co., Dowagiac, Mich., is building an addition to its foundry and one to its main plant. The Northwest Boat Building Co., Green Bay, Wis., is building a machine shop addition. The Universal Foundry Co., Oshkosh, Wis., is preparing to build an addition. The Pelton Steel Co., Milwaukee, will build a cleaning room and core room at its foundry. The Ladish Drop Forge Co., Cudahy, Wis., will build a forge shop. Springfield, Mo., has voted $1,500,000 bonds to build a waterworks plant.

Government Requirements Rule in Pittsburgh

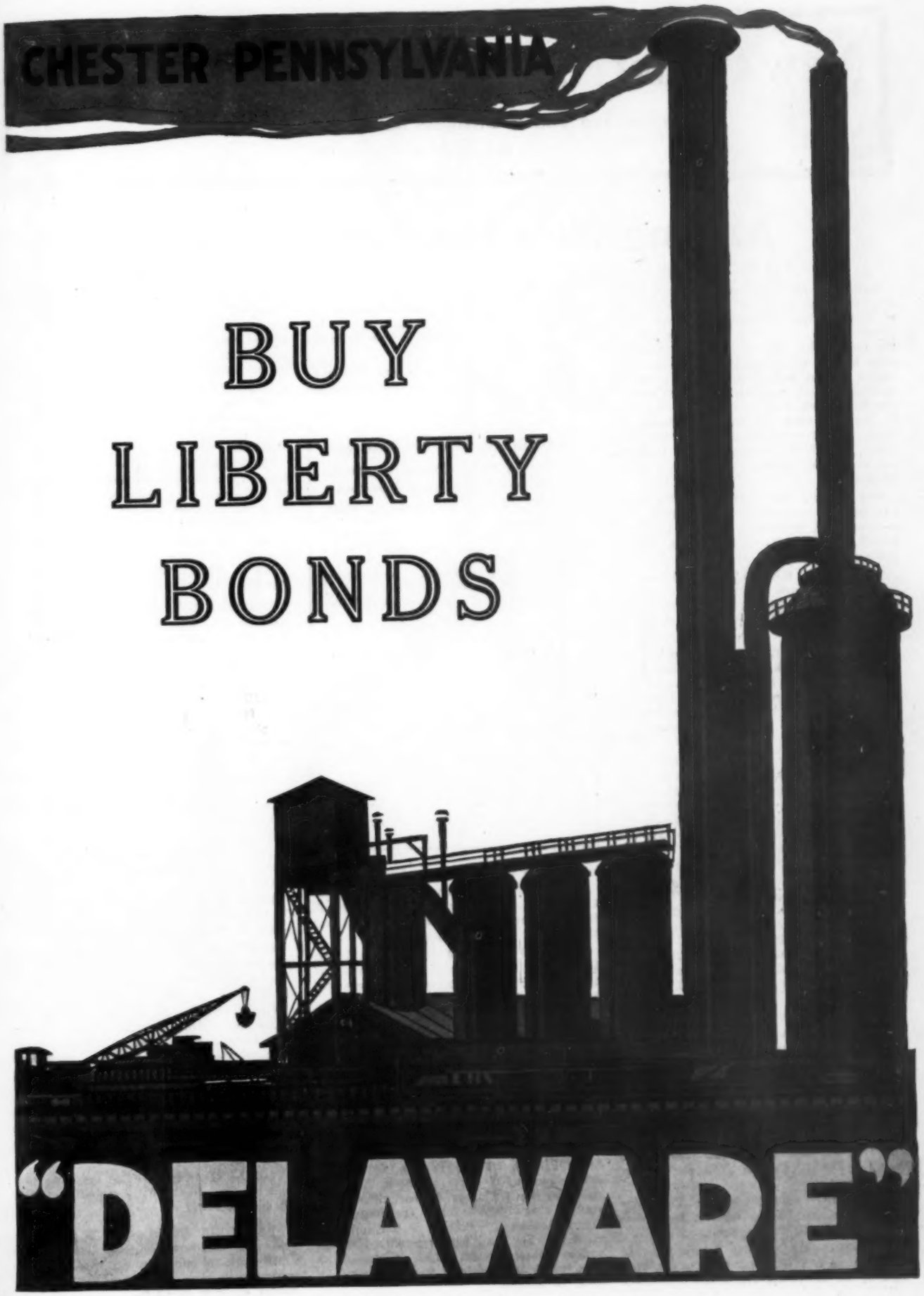
GOVERNMENT requirements for machine tools of various kinds, including cranes and lathes, are dominating the market situation to an increasing degree, according to sellers in the Pittsburgh district. Domestic inquiries and sales are falling off. Complaint is being made that it is more difficult to obtain material, such as steel and castings, that shipments are being held up, and that permits are difficult to obtain. The labor situation also is causing uneasiness. Mechanics who are being paid 45 cents an hour plus a bonus in private shops are going to government establishments where they are paid 62 cents an hour and appear to prefer the flat wage to that obtainable under the bonus system, although the latter offers better pay for those willing to exert sufficient energy. The market for rolling mill equipment, according to one maker, has not developed as much activity as had been expected. Deliveries in this line, however, are much better than they were recently.

Steady Buying of Small Lots Continues

NO LARGE lists are extant in the Cleveland district at the present time, but a steady demand continues for practically all classes of tools. Pressure from government sources has resulted in one or two instances in a requirement for additional machines to speed up contracts. In these cases, no formal inquiries have been issued, but the purchasers have called upon dealers where machines were available for immediate delivery. A growing tendency on the part of the government to aid contractors in securing machines is evidenced in a number of cases. One dealer reported a 36-inch boring machine ordered by a Detroit manufacturer and shipped by express at the instance of the government. Milling machines, planers of the larger dimensions, boring machines of some types and drills are becoming increasingly difficult to obtain. On some of these classes of machines, deliveries under a year are practically impossible. The used tool situation fluctuates. At the present time there is avaliable a quantity of special machinery which has been used in the manufacture of 75 millimeter shells by eastern manufacturers; but much of it is not practical as it is highly specialized. Light tools for airplane and similar work continues to be in steady demand, but in most cases orders are merely to supply replacements or to enhance existing capacity. A tendency has been evident among those manufacturers who are working on war contracts, to order in advance of their immediate needs and to anticipate repeated and enlarged orders. A national organization to promote production on munitions has come into existence through the efforts of Maj. B. A. Franklin. This organization, which is known as the American Fuse Manufacturers' association, will meet in Cleveland this week with a view to centralizing the work in progress. Officials from the ordnance inspection and design departments will take an active part in this meeting and in others which are to be held at the various munition centers throughout the country. The market on heavy machinery is quiet and not many orders are being placed. Several inquiries are out from foundries on sand-handling equipment. Another interesting feature is introduced by the difficulty which almost amounts to an inability to secure slack for fuel with a resultant inquiry for coal-crushing equipment. The C. O. Bartlett & Snow Co., Cleveland, reports that it has recently received seven inquiries on a large coal-crushing machine of a type to be manufactured, but of which as yet only one has been built. This company with others has received inquiries for and has entered bids upon the following material for the government; coal-handling equipment for the Alabama power plant, equipment for a chemical plant whose site has not yet been chosen, and conveying, coal-handling, chemical, and other equipment for the new explosive plant at Charleston, W. Va. One Cleveland builder is installing sintering equipment for a Colorado plant and has bids out on two additional installations.

Crane Market Consists of Limited Inquiries

A lull in the crane market is apparent, with but a few orders being placed, outside of cranes for government shipyards, etc., although inquiries are frequent. Revised specifications have made necessary the receiving of new bids on a large contract for navy yard locomotive cranes, which was to have been let last week. One 100-ton unit for the Washington navy yard is being built by the Cleveland Crane & Engineering Co., Wickliffe, O., and will be completed in the near future.



Say you saw it in THE IRON TRADE REVIEW

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

BANGOR, ME.—The Banner Shipbuilding Co., capitalized for $100,000, has filed articles of incorporation. The company will build several three and four-masted schooners at the old Crosby shipyard at East Hampden, when has been idle for almost 40 years. The officers of the new company, all prominent Bangor business men, are: Charles Murray, president; Eben Leavitt, vice president; John H. Rice, secretary and treasurer; Roscoe H. Wing, general manager; and these men with Capt. Edward E. Harvey, Victor Hodgkins and Ernest W. Beach, comprise the board of directors.

PORTLAND, ME. — The Carragher-Hogan Co. has been incorporated to do all kinds of manufacturing, mechanical, mining, etc., with $10,000 capital by Harold O. Corson, Earl F. Coffin and William H. Murray.

PORTLAND, ME.—The Farrar-Brown Co. has been incorporated to make motor vehicles of all kinds, aeroplanes, etc., with $50,000 capital by Carroll L. Beedy and Frank K. Farrar.

ROCKLAND, ME. — The Francis Cobb Shipbuilding Co. has been organized here with a capital of $150,000 by H. N. McDougall, B. C. Perry, Arthur S. Littlefield, William T. Cobb, G. A. Lawrence, A. D. Spear and M. B. Perry, of Rockland and Maynard S. Bird, of Portland.

BOSTON.—Mayor Peters has signed a contract for erecting an elementary school in the Roger Wolcott district, Mattapan, at a cost of $117,000. The building will consist of eight regular class rooms, two kindergartens, teachers' and nurses' rooms and a master's office. The Murphy Construction Co. was the successful bidder for the contract.

BOSTON.—Plans have been completed for the group of buildings to be erected on Single Tree Hill, Brookline, for the Christian Science Benevolent association. The buildings, which will be of brick, will include several two and one-half story dormitories, each 130 by 40 feet and an administration building 100 by 50 feet. Bids are being received for the foundation work.

BOSTON.—Property on the corner of East First and K streets, South Boston, consisting of about 39,900 square feet of land, has been purchased by the Linde Air Products Co., which will begin building a manufacturing plant at once. The property is located near where the new warehouse is to be erected for the war department.

BROCKTON, MASS.—The General Fastener Co., Inc., has been incorporated with $20,000 capital by O. L. Carlson, John F. Donnelly and E. V. Carlson.

CAMBRIDGE, MASS. — The Cambridge Smelting Co. has let the contract for a concrete plant at 100 Pacific street.

CONCORD, MASS.—The 5-story plant of the Whitman & Pratt Rendering Co. was damaged by fire March 22, with a loss of $400,000.

CONCORD JUNCTION, MASS. — Fire, which started near the boilers, destroyed the plant of the Whitman & Pratt Rendering Co. here on Friday and caused a loss estimated at $175,000.

LOWELL, MASS.—The factory of George L. Cady & Sons, machinists tools, was damaged by fire recently, causing $50,000 loss.

Government Inquiries

Bids on the following equipment are desired by the navy department, bureau of supplies and accounts, Washington:

One steam locomotive, 3631¼, April 12, Lake Denmark.

Ten milling machines, one grinder, 3811½, April 12, New London.

One motor driven precision lathe, 3816½, April 12, Philadelphia.

One vertical testing machine, 3831½, April 8, Philadelphia.

One motor driven pipe threading machine, 3833½, April 8, Brooklyn.

One milling machine, 3870½, April 12, Philadelphia.

One acetylene welding and cutting apparatus, and machine tools including grinder, radial drill, and swivel base vise, 3879½, April 12, Melville, R. I.

Locomotive crane, 20 to 30 tons, 3880½, April 12, Philadelphia.

The schedule numbers dates of opening bids and places of delivery follow the specifications of the tools.

MEDWAY, MASS.—The Curtiss Aeroplane Co., Buffalo, is building a plant in North Medway, Mass., where it will make and test airplanes for the government.

SOUTH BOSTON, MASS.—The Linde Air Products Co. has purchased 39,900 square feet of land at East First and K streets and will build a manufacturing plant at once.

SPRINGFIELD, MASS.—The Atlantic Refining Co. has been incorporated with $50,000 capital by Frank D. P. Howland, Louis M. Coates and I. M. Mitchell.

SPRINGFIELD, MASS.—The Garage Heater Co. has been incorporated with $5000 capital by Albert J. Lane, Winthrop K. Lombard and C. W. Hale.

WARE, MASS.—The Ware & Brookfield Street railway will be put up for sale at public auction at noon on April 22. The American Trust Co., of Boston, will sell the road at a mortgagee's sale. The estate of J. Henry Brooks, of Boston, is the principal claimant. The road has been offered to the various towns through which it runs at a price which it is claimed it would bring for junk, or $75,000.

WORCESTER, MASS.—The Standard Oil Co., New York, will build a reinforced concrete and hollow tile fireproof, 2-story, 60 x 85-foot warehouse, a 2-story, 60 x 120-foot combination garage and stable and a 1-story wagon shed to cost $75,000 on Mulberry street.

WESTFIELD, MASS.—Bids are being received now by the Hampton Abrasive Co. for the construction of a factory building, store house and crushing plant. A. B. Harding is architect.

PROVIDENCE, R. I. — Plans are being drawn for a $6000 pump house for the Priscilla Worsted Co. Jinks & Ballou are the engineers in charge.

PROVIDENCE, R. I. — The Providence Fittings Co. has been incorporated to make pipe fittings, etc., with $100,000 capital by Philip C. Joslin, Alfred G. Chaffee and Ira Marcus.

WOONSOCKET, R. I.—The Woonsocket Spinning Co., Inc., has increased its capital stock to $100,000 and will start building an addition to its present plant here within a few weeks. Woolen and merino yarns are the product of this company.

BRIDGEPORT, CONN.—The general contract for the construction of an addition to the plant of the Armstrong Mfg. Co. has been let to H. D. Best & Co., 52 Vanderbilt avenue, New York.

BRISTOL, CONN.—The C. J. Root Co., brass hinges and automatic numbering machines, has increased its capital from $100,000 to $150,000.

FORESTVILLE, CONN.—The factory of the Bryce Mfg. Co., ball bearings, on Fredericks street, was burned March 23, with a loss of $50,000.

HARTFORD, CONN.—The Pratt & Cady Co. will build a brick boiler house and a coal pocket on Cushman street, to cost $23,000.

HARTFORD, CONN. — The Ellison Construction Co. has the general contract for erecting a $15,000 addition to the plant of the M. S. Little Mfg. Co.

NAUGATUCK, CONN.—The Wisdom Tool & Machine Co. has awarded the general contract for the erection of an addition to its plant to the Fred T. Ley Co., Springfield, Mass.

NEW HAVEN, CONN.—The New Haven Special Machinery Co. has been incorporated with $25,000 capital by Harris Botivenik, Hyman Botivenik and Charles L. Smith, Bridgeport, Conn.

PORTLAND, CONN.—The Pickering Governor Co. has increased its capital from $10,000 to $900,000.

STAMFORD, CONN.—The W. W. Penfield Co., manufacturing snap fasteners for 75,000 pairs of gloves a day, has plans for increasing its plant here and adding the manufacture of brass novelties.

OHIO STEEL CASTINGS

If your work is such that you must have steel castings

True to Pattern
and
Absolutely Clean

and you would be interested in procuring castings with which you would have a

Minimum Machine Shop Loss,
give us a trial.

Our Springfield Plant is the best equipped and most modern in the country for production of steel castings up to 250 pounds.

The Ohio Steel Foundry Co.
Spingfield, Ohio Lima, Ohio Bucyrus, Ohio

PLUS QUALITY SERVICE

Along the Middle Atlantic Seaboard

ALBANY, N. Y.—Work will start at once on the construction of a $100,000 pulp mill and paper factory for the Albany Perforated Wrapping Paper Co. The new building will be 1-story, 120 x 300 feet. It is expected that three more buildings will be erected later.

BROOKLYN, N. Y.—The Potdevin Machine Co. has awarded to Rufus H. Brown, 350 Fulton street, the general contract for the construction of a $20,000 machine shop, 1-story, 120 x 150 feet.

BROOKLYN, N. Y.—Architects Hoch & Wagner, 26 Court street, will build a 6-story, 50 x 200-foot factory building for the George W. Baker Shoe Co., 343 Classon avenue.

BUFFALO.—The Standard Hardware Lumber Co. is planning to rebuild its plant from private plans, at a cost of $20,000.

BUFFALO.—The Buffalo Nipple & Machine Co. contemplates the erection of a new plant addition. George Keppel, 335 Glenwood avenue, is receiving bids.

BUFFALO.—The Schwartz Mfg. Co., 58 Carlton street, let a contract to B. I. Crooker, Builders' exchange for an $8000 factory at 1527-29 Niagara street.

BUFFALO.—The Pullman Co., Broadway, will build a $15,000 dry kiln here.

BUFFALO.—J. J. Carrick has had plans prepared for a $40,000 factory on Clyde street, and will also erect a $10,000 factory.

BUFFALO.—W. D. Welch, 113 Charles street, is president of the Buffalo Wagon Works which is having plans prepared for an addition to its plant.

BUFFALO.—The Stuart Motor Co. will build an assembling plant 924 x 100 feet on East Delavan avenue.

BUFFALO.—The Delaney Forge & Iron Co., 300 Berry street, will have bids taken soon by Engineer G. O. Gonde, 300 Berry street, for a 1-story forge shop 130 x 500 feet.

BUFFALO.—The Augustine Automatic Rotary Engine Co., 1816 Elmwood avenue, is arranging to build an addition to its plant.

BUFFALO.—The Detroit & Cleveland Navigation Co., Main street, of which C. L. Perkins is manager, will build a 3-story warehouse 60 x 90 feet, about $50,000.

BUFFALO.—The J. H. Williams Co., 400 Vulcan building, let a contract to J. W. Ferguson, United Bank building, Paterson, N. J., for a $75,000 drop forge plant 75 x 200 feet.

BUFFALO.—The Arnold Co., 105 South La Salle street, Chicago, has a contract for a $2,000,000 repair shop here for the Pullman Co., 79 East Adams street, Chicago.

BUFFALO.—The Dormer Estate, Ellicott square, let a contract to V. J. Metz, 37 East North street, for a $75,000 factory.

COLLEGE POINT, L. I., N. Y.—The Austin Co., 217 Broadway, New York, is drawing plans for a $15,000 factory for the L. W. F. Engineering Co., builder of airplanes. The proposed building will be 1-story high and 212 x 250 feet.

ELMIRA, N. Y.—Architect H. M. Haskell, Bulett building, has plans for a 1-story factory, 23 x 144 feet, for the Hillard Clutch & Machine Co.

NEW YORK.—Anton Heiss, manufacturer of automobile supplies, is having plans drawn by Moore & Landisedel, architects, for a $15,000 addition to his plant at 518 East 133rd street.

NIAGARA FALLS, N. Y.—The McKinney-McGuire Construction Co. has a contract for a storage plant for the Union Carbide Co., of which George O. Knapp, 30 East Forty-second street, New York, is president.

WOODSIDE, L. I., N. Y.—A $20,000 plant will be erected by Jacob Maisel, for which plans have been drawn by Architect Richard Lukowsky, 477 Fourteenth avenue, Long Island City, N. Y. The proposed building will be 1-story high, 33 x 200 feet.

ALLENTOWN, PA. — The La Cleveland Christie Clay Products Co., St. Louis, Mo., has a contract for a glass furnace and annealing ovens for the Glass Casket Corp., under the direction of C. J. McKelvey, general manager of the company.

ALLENTOWN, PA. — The Majestic Silk Mills, Inc., New York City, will fit up a branch factory, under the direction of Julius H. Bernstein, president.

CLIFTON HEIGHTS, PA. — Frank E. Hahn, architect, Philadelphia, has completed plans for a 47 x 60-foot power house, for the Kent Mfg. Co. Bids will be received shortly.

ELLWOOD CITY, PA.—E. R. Koch, of this city, is largely interested in a new company which has leased property here and will fit up a plant for making cement building blocks.

LEBANON, PA.—The Bunker Hill Sand & Stone Co. will purchase considerable new equipment at once for their plant.

LEBANON, PA.—The Lebanon Steel Foundry Co. has had plans prepared for another building at its plant.

MANORVILLE, PA.—The Triple Airless Tire Co., Kittanning, Pa., has bought an old brick works property and will remodel it.

MEADVILLE, PA. — The Niagara Silk Mills Co. will build an addition to its plant this spring.

NORRISTOWN, PA.—The Birdsboro Steel Foundry & Machine Co. has let out a contract for an addition 125 x 60 and 50 x 60 feet to its plant.

PHILADELPHIA.—William Steele & Son, builders, will soon take separate bids on work involved in the construction of a machine shop for the C. H. Wheeler Mfg. Co. The proposed structure will be two stories, 58 x 108 feet, and will cost $60,000.

PHILADELPHIA. — The general contract for the construction of a power plant addition and boiler house, involving an expenditure of $30,000, has been awarded by L. H. Lieberman's Sons to the Conneen Construction Co.

PHILADELPHIA.—The Tacony Ordnance Co. has let the general contract to the F. W. Mark Co. for the construction of a $10,000 locomotive house.

PITTSBURGH.—The Edward E. Rieck Co., 1345 Forbes street is having plans prepared by C. D. Cooley Co., Century building, for a 4-story dairy plant, 36 x 100 feet, on Locust street.

POTTSTOWN, PA. — The Concrete Products Co., which is headed by C. I. McKenzie, of Pittsburgh, and which is a subsidiary of the Pittsburgh Construction Co., is arranging to build a plant in this city.

READING, PA.—The Carpenter Steel Co. has awarded to Daniel Hunter the general contract for a furnace building, to cost $35,000.

SCRANTON, PA.—The International Silk Throwing Co. will build a 3-story, 51 x 113-foot mill addition, to cost $50,000.

SHARON, PA.—The Concrete Brick & Fence Post Co., Wheeling, W. Va., will build a factory; Theodore Smith, 2909 Jacob street, Wheeling, manager.

TITUSVILLE, PA.—The American Radiator Co. has awarded the general contract to the J. W. Cowper Co., Inc., for the construction of a $25,000 foundry. The proposed building will be 1-story, 80 x 100 feet.

WARREN, PA.—Gannoe Mfg. Co., Warren, Pa., capitalized at $200,000 was chartered to operate fire arms factory, by Thomas A. Gannoe, George B. Munn, Arthur T. Eaton, L. E. Chapman, Warren and I. G. Hyer, Clarendon, Pa.

WILLIAMSPORT, PA. — The National Foundry Mfg. & Supply Co. has let the contract for rebuilding a 1-story plant, 48 x 115.

YORK, PA.—The Frey Hostetter Co. has let out a contract for a warehouse 175 x 140 feet.

EAST ORANGE, N. J.—Foster Machine Co. has been incorporated with $150,000 capital to manufacture textile machinery. Charles R. Fowler, Edward T. Fowler and L. S. Lilley, all of Westfield, Mass., are the incorporators.

HOBOKEN, N. J.—The William Crawford Co., 7 East Forty-second street, New York, has received the general contract for the construction of a $50,000 addition to the plant of W. & A. Fletcher.

JERSEY CITY, N. J.—United Chemical & Organic Products Co. has been incorporated with $1,270,000 capital to manufacture chemicals, etc. M. Y. Haywood, H. E. Letter and C. L. Rimlinger, all of Wilmington, Del., are the incorporators.

JERSEY CITY HEIGHTS, N. J. — The general contract for a $100,000 factory to be erected in this city, has been awarded to Isaac A. Hopper's Sons Inc., 15 East Fortieth street, New York, by a concern whose name is withheld.

MORRISTOWN, N. J. — Morris County Chemical Works has been incorporated with $100,000 capital to manufacture chemicals, dyes, etc. The incorporators are Thomas L. Sexsmith, New York; William Joyce, Scranton, Pa., and John A. Marszalek, Flushing, New York.

NEWARK, N. J.—Herculite Co. has been chartered with $500,000 capital to manufacture plastic compositions. Incorporators are William F. Dill and A. J. Matter, New York, and L. Lawrence, Orange.

NEWARK, N. J.—National Metal Stamping & Mfg. Co., 190 Murray street, will erect a brick and steel machine shop and foundry, 1-story, 90 x 120 feet, to cost $20,000.

NEWARK, N. J. — Tidewater Warehouse Co., Blanchard street, will erect a four-story reinforced concrete storage building, 70 x 163 feet in size, to cost $75,250.

NEWARK, N. J.—The Mono-Service Co. is having Architect Edward E. Grant draw plans for a 50 x 60-foot plant addition.

42
Broadway
New York
U. S. A.

The New Home of the Federal Export Corporation

After May 1st, 1918, the headquarters of the Federal Export Corporation will be in the Federal Export Building, 42 Broadway, New York, where large office space has been provided for the various departments.

These offices, in the heart of the financial and shipping districts, are favorably located for the purposes of an international trading corporation. Here the visiting manufacturer interested in foreign trade will find provision made for his convenience and here, he will meet merchants from the principal markets of the world.

An invitation is extended to all interested in the future of American foreign commerce to visit the new headquarters of an organization earnestly devoted to furthering the interests of that trade.

FEDERAL EXPORT CORPORATION

ADDRESS UNTIL MAY FIRST

115 BROADWAY - NEW YORK

Say you saw it in THE IRON TRADE REVIEW

TRENTON, N. J.—The machine shop and pattern department of the William R. Thropp & Sons Co. was damaged by fire on March 20. The loss is estimated at $150,000. Joseph W. Thropp, secretary-treasurer, announces that the plant will be rebuilt immediately.

TRENTON, N. J.—Crane Co., 46 Escher street, has let the contract to Charles R. Randall, Trenton, for a 3-story addition to their plant to cost $10,000.

WESTFIELD, N. J.—Thomas N. Wrenn, Inc., has been incorporated with $10,000 capital to manufacture chemicals. Incorporators are W. H. Bond, South Orange; H. Couse and J. P. Callender, New York.

BALTIMORE.—Corcoran, Hill & Co. have awarded to the Consolidated Engineering Co. the general contract for a $250,000 cold storage plant.

WASHINGTON.—The Turner Construction Co., 244 Madison avenue, New York, has been awarded a contract by the bureau of yards and docks for the construction of a power plant, to cost about $400,000.

Activities in the Central States

BELOIT, WIS.—The N. B. Gaston & Sons Co., manufacturer of scales, is building additions to its machine shop, forge shop and foundry.

CLINTON, WIS.—A new garage and repair shop costing $12,000 will be erected by William A. Mayhew Jr., to replace the building destroyed by fire two weeks ago. Plans being completed by Architect W. H. Blair, Janesville, Wis., call for a 2-story building of concrete, brick and hollow tile, 50 x 80 feet.

DE PERE, WIS.—The C. A. Lawton Co. is building a 2-story machine shop building 40 x 120 feet.

EAU CLAIRE, WIS.—Architects Foeller & Schober, Green Bay, Wis., are taking bids for the construction and equipment of a boiler room and laundry for the Sacred Heart Hospital in Eau Claire. It will be 35 x 90 feet, and cost about $25,000.

EAU CLAIRE, WIS.—The Union Automobile Co., which recently absorbed the Darwin Motor Car Co. and Eau Claire-Chippewa Buick Co., is planning to build a $50,000 garage and service building, 105 x 125 feet, two stories and part basement, at South Barstow and Gray streets, Eau Claire. C. D. Moon is president of the company.

FOND DU LAC, WIS.—J. S. McCullough, city engineer, is preparing plans for a new steel bridge across the east branch of the Fond du Lac river at West Second street. The structure is expected to cost about $10,000. Bids will be taken some time in April.

GREEN BAY, WIS.—The Hudson & Sharp Machine Co. will build a 2-story plant 40 x 100 feet. D. W. Hudson is president.

GREEN BAY, WIS. — The Northwestern Engineering Co. is being organized with $1,000,000 capital to establish a shipbuilding and marine engineering plant, by L. H. and H. G. Burkhausen.

MADISON, WIS.—The state highway commission is taking bids until March 27 for furnishing 5000 mile markers; 1000 direction signs; 500 patrol signs, and 300 danger signs, both in wood and in metal, and 2500 concrete or wood posts, for the state trunk highway system.

MANITOWOC, WIS.—Bids will be taken after April for the erection of a two-story fireproof garage and repairshop, 40 x 100 feet, for Henri Meisner, 806 Washington street. Architect W. J. Raeuber, 826 South Eighth street, is in charge.

MILWAUKEE. — George E. Zimmermann, 3102 McKinley boulevard, has been awarded a contract amounting to $260,541 for the construction of an extension to the intercepting sewerage system at Milwaukee.

MILWAUKEE.—The capital stock of the Universal Tool & Apparatus Co., Stroh building, has been increased from $10,000 to $15,000.

MILWAUKEE. — The Armour Grain Co. has engaged Klug & Smith, consulting engineers, Mack block, to prepare plans for a 6-story elevator and warehouse addition, 66 x 75 feet, at Cherry and Commerce street, Milwaukee. The building with equipment will cost about $35,000.

MILWAUKEE. — Articles of incorporation have been filed by the Aronovitz Iron & Metal Co., Milwaukee. The capital stock is $10,000 and the incorporators are Patrick W. Dean, John W. Burkhardt and Emil Hirsch. The company will do a general scrap metal and junk business.

MILWAUKEE.—The central board of municipal purchases has accepted the low bid of the Western Electric Co. for furnishing 7800 feet of lead-covered cable at $3492.

MILWAUKEE. — Sealed bids are being taken until March 22 by the central board of purchases for furnishing 7800 lineal feet of lead-covered cable for the new municipal street illuminating system. Percy Braman is commissioner of public works.

MILWAUKEE.—The Utility Hoist & Mfg. Co., capitalized at $25,000 has been chartered to manufacture cranes, hoists and specialties for motor truck dump bodies. A. G. Kritch, W. C. Woodin and A. J. Jansen are interested.

NIAGARA, WIS. — The village board is taking sealed bids until March 26 for the construction of a municipal waterworks and sewerage system, which will cost about $50,000. The specifications were prepared by W. S. Shields, consulting engineer, 1201 Hartford building, Chicago. H. W. Yerkie is village clerk.

SHEBOYGAN, WIS.—An election will be held in April to authorize the construction of a reinforced concrete and steel viaduct 780 feet long, to cost $55,000, and a steel bridge 220 feet long. The Klug & Smith Co., Mack building, Milwaukee, is engineer.

SHEBOYGAN, WIS. — The Jenkins Machine Co., 315 North Eighth street, has had plans prepared by Juul & Sixta, architects, for a 2-story machine shop addition, 45 x 60 feet.

SHEBOYGAN, WIS.—The board of education has under consideration the proposition of erecting a central high school building, with manual training and domestic science departments. The probable cost will be $350,000. W. R. Roseman is city superintendent of schools.

SUN PRAIRIE, WIS.—The village board of trustees has let a contract to the Mierswa Construction Co., Oshkosh, Wis., for a complete sewage disposal and sanitary sewage system at $32,804.

SUPERIOR, WIS. — Riches & Son have taken the contract for erecting a steel and reinforced concrete highway bridge over the Pokegama river at Central avenue at $5775.

TIGERTON, WIS.—Sealed bids for the erection of a high school building in Tigerton are being taken until April 1 by Charles Buckbee, clerk of the board of education. Plans were prepared by Architects Swarthout & Speer, Wausau, Wis. The estimated cost is $40,000.

ALMA, MICH.—The R. & P. Tractor Co., recently chartered with a capital of $500,000 will build a plant. C. Parsons is vice president.

DETROIT.—The Anderson Tractor Equipment Co., capitalized at $10,000, has been chartered by John L. Hayden, James B. Anderson and William H. Anderson.

DETROIT.—The Freuhof Trailer Co., capitalized at $150,000, has been incorporated to

Trade Announcements

The New York office of the M. B. Suydam Co., Pittsburgh, paint manufacturers, has removed to 280 Madison avenue. C. C. Potter, eastern sales manager, is in charge, formerly carriedon by the partnership of Marani & Moore, Euclid building, Cleveland, as the out-of-town interests of V. C. Marani occupy his entire attention.

The Liberty Steel Products Co. of New York has opened offices in the Newhall building, with A. L. Martin, formerly with the Sharon Steel Hoop Co., Youngstown, O., in charge.

J. E. A. Moore, M. A. Soc. C. E., will continue the consulting practice

The main office of The Amalgamated Brass Co., formerly in Cincinnati, has been moved to the new plant of the company at Blanchester, O. The Fulflo Pump Co. has also removed its offices to Blanchester, O.

Clark Bros. Bolt Co., Milldale, Conn., announce the removal of J. C. F. Yarnell, western sales manager, from Chicago to 2671 W. Grand boulevard, Detroit.

The A. R. Williams Machinery & Supply Corp., Toronto, Ont., has opened a branch sales office at 402 Fidelity building, New York.

He says we are bluffing!
Let's show him a big Card —
and everybody in on the Pot.
Put up your ante now in the
3RD
LIBERTY
LOAN
3rd LIBERTY LOAN
2nd LIBERTY LOAN
1st LIBERTY LOAN
In co-operation with the Liberty Loan Committee this advertisement is published by
The Iron Trade Review
If you would like reproductions of this page singly or in quantities let us know.

manufacture automobile trailers. E. M. Freuhof, August C. Louis and E. M. Freuhof are the incorporators.

DOWAGIAC, MICH.—The Rudy Furnace Co. is letting the contract for a brick and steel addition to its present molding room. The addition will be 120 x 146 feet and will add materially to its present molding capacity. The contract is to be completed within 60 days. Plans were prepared by R. A. Le Roy of Kalamazoo, Mich.

GRAND RAPIDS, MICH.—The Michigan Boiler & Iron Works, capitalized at $10,000 has been chartered by William R. Cook, Carroll F. Sweet and Peter A. Gildhof.

JACKSON, MICH.—The Wolverine Grinding Wheel Co. has been chartered to manufacture straight internal grinding emery wheels, by Hugo C. Loeser, president, and William H. Loeser, secretary-treasurer.

AURORA, ILL.—The Aurora Tool Works has bought a site and will build an addition to its plant.

CHICAGO.—The Andrews Engineering Co. has let the contract for a 1-story truss-roof building, 150 x 150 feet, with a 40-foot ceiling. The building will be used for the manufacture of steel mill machinery and will be of special type construction. It will be equipped with a 10-ton electric traveling crane, and served by the Chicago River and Indiana Harbor Belt switch track at grade, which the Andrews Engineering Co. has contracted to purchase for $52,500. John C. McKeown is the contractor.

CHICAGO.—The Gits Bros. Mfg. Co., manufacturer of automobile and airplane oil cups, has bought 160 x 275 feet at Sixteenth street and Kilbourne avenue, and will build a 1-story saw-tooth roof machine shop to cost $27,000

CHICAGO. — The Western Electric Co., Twenty-second street and Forty-eighth avenue, is having plans prepared by its chief engineer for a 6-story factory 211 x 675 feet, of reinforced concrete, to cost about $1,000,000.

CHICAGO.—The Roth Mfg. Co., 118 South Clinton street, is building, a 1-story factory, 299 x 309 feet, to cost $60,000.

CHICAGO.—The sanitary district, 910 South Michigan avenue, will take bids April 1, on the Calumet pumping station to cost $2,000,000.

ROCKFORD, ILL.—The Rockford Milling Machine Co., Eleventh street and Harrison avenue, is building an addition to its machine shop.

EVANSVILLE, IND.—The Hercules Buggy Mfg. Co., Martin avenue and Indiana street, is having plans prepared by W. E. Russ, architect, 1405 Merchants Bank building, Indianapolis, for a 1-story factory, 180 x 1000 feet. J. D. Craft is manager.

FT. WAYNE, IND.—Bids will be received until March 28 by the commissioners of Allen county for a 3-span reinforced concrete bridge over the St. Joseph river at State street. A. W. Grosvenor is county surveyor.

KOKOMO, IND. — The Liberty Pressed Metal Co., capitalized at $15,000, has been chartered to manufacture metal articles, by A. V. Conradt, F. S. McNeill and J. W Johnson.

KOKOMO, IND.—The Automatic Bale Tie Co., capitalized at $70,000, has been chartered to manufacture baling machines. Thomas S. Pearson, and Theodore M. Connor are the incorporators.

MUNCIE, IND.—The Muncie Gear Co., Vice and Wyse streets, will build a 1-story addition 139 x 450 feet. The Austin Co., Cleveland, will receive bids.

SOUTH BEND, IND.—The Anderson Co., capitalized at $20,000, has been chartered to manufacture automobile parts, by A. G. Graham, John W. Anderson and Adam Keasey.

UNION CITY, IND.—The Titan Engineering Co. is building a plant to manufacture starting, ignition and lighting systems for automobiles. W. F. Roberts, Anderson, Ind., is president.

VINCENNES, IND.—The Central Pipe & Supply Co., capitalized at $125,000 has been chartered to manufacture machinery and pipe by E. M. Kerlin, C. E. Clark and Thomas F. Morrissey.

WABASH, IND. — The Service Motor Truck Co. has plans for a 1-story addition.

HAMILTON, O. — The Peerless Foundry Co.'s plant was damaged by fire March 24. The estimated loss is around $50,000, covered by insurance.

CHARLESTON, W. VA.—The P. C. Lynch Coal Co., authorized to operate a coal and timber business, and capitalized at $20,000 was organized by P. C. Lynch, W. H. Cunningham, P. J. Lynch and W. J. Shepard, Raleigh county and H. E. Nease, Charleston.

CHARLESTON, W. VA. — The Virginia Elkhorn By-Products Coal Co., of Huntington, capitalized at $300,000 was organized to operate in Cabell county by J. R. Slayton, H. T. Lambert, J. F. Ratcliff, C. M. Love and A. C. Love, Huntington.

DUNBAR, W. VA. — The Whittenmore Glass Co., capitalized at $150,000 has been chartered by A. S. Whittemore, Ulysses G. Fletcher and others of Charleston, W. Va., and will build a glass plant.

WHEELING, W. VA.—The Pullman Co. is planning to erect a $1,000,000 plant at Beech Bottom for the building of pullman cars.

WHEELING, W. VA.—The Earle Chemical Co., capitalized at $15,000 was incorporated by E. I. Runner, E. H. Draher, Eugene Hill, Raymond Sypher and Cora Rader, Wheeling.

New Business in Eastern Canada

LONDON, ONT. — The Helena Costume Co., 190 King street, is in the market for a direct-current generator, 60 kilowatt, 110 volts, 680 revolutions per minute compound wound.

OTTAWA, ONT.—Boxes, Ltd., has been incorporated to manufacture boxes, containers, etc., with $250,000 capital stock. Harvey Fitzsimons, George C. Hurdman, Albert M. Davis and others are interested.

OTTAWA, ONT.—John A. Pearson, architect, Parliament buildings, will receive sealed tenders up to April 11 for the electric wire and cable required in the reconstruction of the Parliament buildings. Schedule of materials, specifications, etc., can be obtained from P. Lyall & Sons Construction Co., Ltd., Ottawa.

OTTAWA, ONT.—The Dillon Mfg. Co., Ltd., has been incorporated to manufacture barn and stable fittings, builders hardware and tools; $75,000 capital stock; Richard B. Dillon, Gertrude R. Dillon, William G. Henderson and others of Ottawa, provisional directors.

OWEN SOUND, ONT.—The Empire Stove & Furnace Co. is in the market for three motors, 15, 20 and 25 horsepower of the 60-cycle, 550-volt, 3-phase type.

OWEN SOUND, ONT.—Keenan Brothers Ltd., are in the market for a 60 to 75 horsepower engine.

ST. CATHARINES, ONT.—The St. Catharines Taxicabs, Ltd., has been incorporated to manufacture automobiles, bicycles, motors, engines, machinery, etc., with $40,000 capital stock; by Francis J. Murphy, Frazer F. Summers, George B. Burson and others.

TORONTO, ONT.—George H. Gooderliam, chairman of the Toronto and Hamilton highway commission, will receive sealed tenders up to April 2 for the supply and erection of steel bridges over Mimico creek, Etobicoke creek, Credit river and Bronte creek. Also tenders up to the same date for the supply and erection of concrete bridges and approaches over these creeks.

TORONTO, ONT.—Union Chrome Co., Ltd., has been incorporated to carry on mining, engineering and metallurgical operations and operate mills, smelting furnaces and reduction works; capital stock to be 100 shares without nominal or par value; by Irving L. Wiltsie, Anna C. Austin, Abigail de Jongh and others, of New York.

TORONTO, ONT.—The Hercules Rubber Co., Ltd., has been incorporated to manufacture rubber, tires, etc.; $150,000 capital stock. John A. Campbell, James L. Ross, Jacob H. Greenberg and others of Toronto, are the provisional incorporators.

TORONTO, ONT.—The Rudd Paper Box Co., Ltd., 374 Richmond street, west, is in the market for a screw cutting engine lathe.

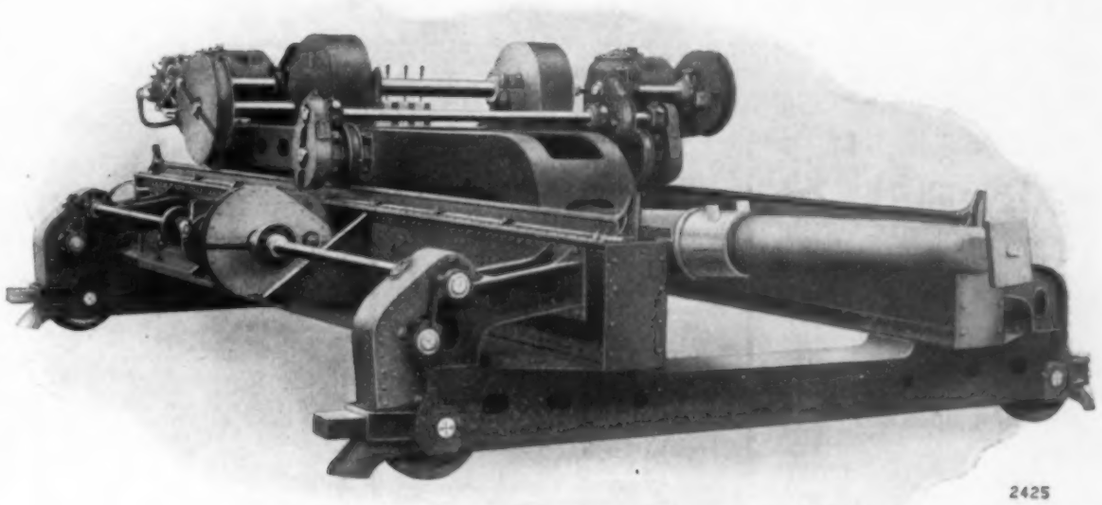
TORONTO, ONT. — James, Loudon & Hertzberg, Excelsior Life building, are asking for prices on malleable iron work machinery, new or second hand.

TORONTO, ONT.—The Cluff Ammunition Co., Atlantic avenue, will build a breaker building in connection with its munitions plant, to cost $25,000.

TORONTO, ONT. — The Martin Dome Hook, Ltd., has been incorporated to manufacture hooks and fasteners with $300,000 capital stock by Louis L. Martin, 81 Peter street; Elliott W. Langley, John Staunton and others.

TORONTO, ONT.—The Divinhood Co. of Canada, Ltd., has been incorporated to manufacture diving machinery, apparatus and suits, with $40,000 capital stock. Frederick H Market, Waldo W. Skinner, Gordon G. Hyde and others, Montreal, Que., are the incorporators.

WINDSOR, ONT.—The Universal Button Co., Walker road, Walkerville, Ont., will erect a factory at Windsor, to cost $15,000. Henry Ford is manager.



Low Type Charger Designed and Built for Republic Iron and Steel Co., Youngstown, Ohio

CHARGING MACHINES AND MANIPULATORS

A New W-S-M Bulletin

Of interest to users of charging and manipulating equipment is our new Bulletin A-7. It describes our various standard type Open Hearth chargers, also special machines for charging Heating Furnaces, for handling slabs, ingots, blooms, billets, wheels, tires, etc. We are prepared to build a special machine for your particular requirements.

Write for Bulletin A-7

The Wellman-Seaver-Morgan Co.

Cleveland, Ohio, U. S. A.

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$5.95
Mesabi Bessemer, 55 iron	5.70
Old range non-Bess., 51½ iron	5.20
Mesabi non-Bess., 51½ iron	5.05

WAREHOUSE PRICES

Steel bars, Chicago	4.10c
Steel bars, Cleveland	4.035c
Steel bars, Detroit	4.085c
Steel bars, Philadelphia	4.10c
Steel bars, New York	4.095c
Steel bars, St. Louis	4.17c
Steel bars, Cincinnati	4.085c
Steel bars, St. Paul	4.22c
Steel bars, Buffalo	4.05c
Iron bars, Buffalo	4.65c
Iron bars, Chicago	4.10c
Iron bars, Cleveland	3.985c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.17c
Iron bars, Cincinnati	4.085c
Iron bars, Philadelphia	4.50c
Iron bars, New York	4.659c
Shapes, Chicago	4.20c
Shapes, Detroit	4.185c
Shapes, St. Louis	4.27c
Shapes, St. Paul	4.32c
Shapes, New York	4.195c
Shapes, Cleveland	4.135c
Shapes, Philadelphia	4.20c
Shapes, Buffalo	4.15c
Shapes, Cincinnati	4.185c
Plates, Buffalo	4.40c
Plates, Chicago	4.45c
Plates, Detroit	4.435c
Plates, St. Louis	4.52c
Plates, St. Paul	4.57c
Plates, New York	4.445c
Plates, Cleveland	4.385c
Plates, Philadelphia	4.45c
Plates, Cincinnati	4.435c
No. 10 blue anl. sheets, Chi.	5.45c
No. 10 blue anl. sheets, Cleve.	5.385c
No. 10 blue anl., Buffalo	5.40c
No. 10 blue anl., sheets, St. L.	5.52c
No. 10 blue anl. sheets, Cinci.	5.435c
No. 10 blue anl. sheets, St. Paul	5.57c
No. 10 blue anl. sh., Detroit	5.435c
No. 28 black sheets, Chgo.	6.45c
No. 28 black sheets, Cleve.	6.385c
No. 28 black sheets, Cinci.	5.45c
No. 28 black, Detroit	6.435c
No. 28 black sheets, St. L.	6.52c
No. 28 black sheets, St. Paul	6.57c
No. 28 galv. sheets, Chgo.	7.70c
No. 28 galv. sheets, Cleve.	7.635c
No. 28 galv. sheets, Cinci.	6.635c
No. 28 galvanized, Detroit	7.685c
No. 28 galv. sheets, St. L.	7.77c
Hoops, Cleveland	4.885c
Hoops, Detroit	4.935c

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$22.50 to 23.00
Bundled sheets, Pittsburgh	$22.00
Bundled sheets, Cleveland	23.50 to 24.25
Bundled sheets, Buffalo	21.00 to 23.00
Boiler plate, cut, No. 1 Chgo.	24.50 to 25.50
Boiler plate, cut No. 1, St. L.	25.50 to 26.00
City wrought, short, N. Y.	26.50
Frogs, switches, guards, St. L.	28.50 to 29.00
Frogs, switches, guards, Chgo.	29.00
Heavy melting steel, Pitts.	29.00
Heavy melting steel, Buffalo	30.00
Heavy melting steel, Chgo.	29.00
Heavy melt'g steel, Cleveland	29.00
Heavy melting steel, Cinci.	27.00 to 27.50
Heavy melt'g steel, east. Pa.	28.50 to 29.00
Heavy melting steel, N. Y.	25.00 to 25.50
Heavy melting steel, St. L.	28.00 to 28.50
Heavy melting steel, Birming.	24.00 to 25.00
Hydraulic press. sheets, Cleve.	28.50 to 29.00
Hydraulic press. sheets, Pitts.	26.00
Hydraulic press. sheets, Chgo.	27.00 to 27.50
Knuckles, couplers, Chgo.	34.00
Knuckles, coup. St. Louis	33.75 to 34.00
Low phos. steel, Buffalo	37.50
Low phos. steel, Pittsburgh	39.00
Low phos. steel, eastern Pa.	36.50
Shoveling steel, Chicago	29.00
Shoveling steel, St. Louis	28.00 to 28.50
Springs, Chgo.	34.00
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	35.00
Steel rails, short, St. Louis	33.75 to 34.00
Steel rails, old, Birmingham.	28.00 to 30.00
Stove plate, Chgo.	25.50 to 26.50
Stove plate, Cincinnati	20.00 to 20.50
Stove plate, St. Louis	22.50 to 23.00
Stove plate, N. J. points	23.75
Stove plate, Birmingham	17.50 to 20.00
Stove plate, Buffalo	24.00
Stove plate, eastern Pa.	23.00 to 24.00
Stove plate, Cleveland	27.50
Stove plate, Pittsburgh	22.00
Bundled sheets, Cincinnati	20.00 to 20.50

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$0.95
Newark, N. J.	3.50
Boston	3.70
Philadelphia	3.30
Pittsburgh	.95
St. Louis	3.18
Minneapolis, St. Paul	4.54
Buffalo to:	
Albany, N. Y.	$1.26
New England (rail)	3.10
New York and Brooklyn (rail)	3.10
Virginia furnaces to:	
Philadelphia	$3.27
New England	3.77
Brooklyn, Jersey City, Newark	3.52
Birmingham, Ala., to:	
Boston	6.00
Cincinnati	2.90
Chicago	4.00
Cleveland	4.00
Louisville, Ky.	2.65
Minneapolis, St. Paul	5.85
New York (r. and w.)	6.00
Philadelphia (r. and w.)	5.25
Pittsburgh	4.90
Savannah, Ga.	2.75
St. Louis	3.40
Chicago to:	
Des Moines	$2.80
Milwaukee	.50
Minneapolis, St. Paul	2.00
Moline, Ill.	1.15
Omaha	3.58
St. Louis	1.58
Ironton and Jackson, O., to:	
Chicago	$2.54
Cincinnati	1.26
Cleveland	1.62
Detroit	1.81
Indianapolis	1.58
Minneapolis, St. Paul	4.54
Duluth, Minn., to:	
Minneapolis- St. Paul	$1.25
Mayville, Wis.:	
Minneapolis-St. Paul	$1.75

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	19.5 cents
Philadelphia	18.5 cents
Boston	21.5 cents
Buffalo	16.0 cents
Baltimore	18.0 cents
Cleveland	13.5 cents
Cincinnati	17.0 cents
Chicago	21.5 cents
Detroit	15.7 cents
Minneapolis and St. Paul	32.9 cents
Denver	82.5 cents
St. Louis	27.0 cents
New Orleans	30.0 cents
Birmingham	45.0 cents
Pacific coast (all rail)	75.0 cents
Pacific coast (tin plate)	75.0 cents

IRON MILL USE

Angle bars, iron, Chgo.	$39.00
Angle bars, steel, St. Louis	35.00 to 35.50
Arch bars, transoms, Chgo.	46.50
Arch bars and transoms, St. Louis	45.00 to 45.50
Busheling, No. 1, Cleveland	31.00
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 2, Buffalo	21.00 to 23.00
Busheling, No. 1, Pittsburgh	32.00
Busheling No. 1, Cincinnati	26.75 to 27.50
Busheling, No. 1, Chgo.	28.00 to 29.00
Busheling, No. 2, Chgo.	19.75 to 20.75
Busheling, No. 1, St. Louis	27.00 to 27.50
Cast borings, New York	16.50 to 16.75
Cast borings, eastern Pa.	19.00
Cast borings, Cleveland	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast borings, Cincinnati	15.50 to 16.00
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	12.00 to 13.00
Cast borings, Chgo.	18.25 to 18.75
Cast borings, St. Louis	17.00 to 18.00
City wrought, long, N. Y.	31.00
Cut forge, Chicago	33.00 to 33.50
Forge flashings, small, Cleve.	27.00 to 27.50
Forge flashings, large, Cleve.	27.00 to 27.50
Forge No. 1, eastern Pa.	26.50 to 27.50
Grate bars, Buffalo	24.00
Grate bars, Cleveland	20.50 to 21.50
Grate bars, N. J. points	23.75
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	44.00 to 44.50
Iron axles, Cleveland	46.50
Iron axles, eastern Pa.	46.50
Iron axles, Chicago	46.50
Iron axles, St. Louis	46.00 to 46.50
Iron axles, Buffalo	45.00 to 47.00
Iron rails, Chicago	39.00 to 40.00
Iron rails, Buffalo	36.00 to 37.00
Iron rails, Cincinnati	33.00 to 33.50
Iron rails, St. Louis	34.00 to 35.00
Iron rails, Cleveland	34.00
Machine turnings, Cincinnati	17.25 to 17.75
Machine turnings, Cleve.	18.25
Machine turnings, Buffalo	17.00 to 17.50
Machine turnings, N. Y.	15.50
Machine turnings, Pitts.	19.00
Machine turnings, east. Pa.	18.50 to 19.00
Machine turnings, Birming.	16.50 to 18.00
Machine turnings, Chicago	18.25 to 18.75
Machine shop turnings, St. L.	18.50 to 19.00
Pipes and flues, Cleveland	24.50 to 25.50
Pipes and flues, Chicago	26.00 to 27.00
Pipes and flues, St. Louis	27.50 to 28.00
R. R. mch. cast, No. 1, Buff.	34.00
R. R. wrgt. No. 1, Buffalo	34.00
R. R. wrgt., No. 1, east. Pa.	34.00
Railroad wrgt. No. 1 Cinci.	33.50 to 34.00
Railroad wrgt., No. 1, Cleve.	34.00
R. R. wrought, No. 1, Pitts.	34.00
Railroad wr'ght, No. 1, Chgo.	34.00
Railroad wr'ght, No. 2, Chgo.	32.50 to 33.00
R. R. wrgt. No. 1, Birming.	26.00 to 27.00
No. 1 yard wrought East Pa.	34.00
No. 1 busheling wrgt., E. Pa.	32.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. L.	34.00
Railroad wrgt. No. 2	33.50 to 34.00
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, eastern Pa.	31.50 to 32.50
Wrought pipe, ungraded, eastern Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00 to 25.00
Axle turnings, Buffalo	24.00
Heavy axle turn'gs, E. Pa.	25.00
Heavy axle turnings, Pitts.	25.00
Shafting, New York	36.00
Shafting, eastern Pa.	39.00
Steel car axles, Pittsburgh	46.50
Steel car axles, Birmingham.	32.00 to 33.00
Steel car axles, New York	43.00
Steel car axles, Buffalo	44.00 to 46.00
Steel car axles, Cleveland	44.00
Steel car axles, eastern Pa.	46.50
Steel car axles, Chgo.	46.50
Shafting, St. Louis	37.50 to 38.00
Steel car axles, St. Louis	46.00 to 46.50

IRON FOUNDRY USE

Car wheels, (iron), Pitts.	$29.00
Car wheels, (steel), Pitts.	34.00 to 35.00
Car wheels, eastern Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	25.00 to 30.00
Car wheels, Cleveland	30.00
Tram car wheels, Birming.	21.00 to 25.00
Cast, No. 1 cupola east. Pa.	33.00
Cast, No. 1, Birmingham	24.00 to 25.00
Cast No. 1, Cleveland	32.75
Cast No. 1, Cincinnati	29.00 to 29.50
Cast, 1, heavy, N. J. points	32.25 to 32.75
Cast, 1, machy., N. J. points	32.25 to 32.75
Cast No. 1, Chicago	33.00 to 34.00
Cast, No. 1, Pittsburgh	34.00
Cast No. 1 St. Louis	27.50 to 28.00
Malleable, Cincinnati	30.00 to 35.00
Malleable, Cleveland	30.00 to 35.00
Malleable, Buffalo	29.00 to 34.00
Malleable, Pittsburgh	33.00 to 34.00
Malleable, east. Pa.	29.00
Malleable, cupola, East Pa.	35.00
Malleable railroad, Chgo.	33.00 to 34.00
Malleable, agricultural, Chgo.	33.00 to 34.00
Malleable railroad, St. Louis	28.00 to 28.50
Malleabel agricultural, St. L.	27.25 to 27.75
Cast, No. 1, Cincinnati	26.00 to 26.50

MISCELLANEOUS USES

Boiler punchings, Chgo.	36.50 to 37.50
Reroll. rails, 5 ft. & ov., Pitts.	34.00
Reroll. rails, 5 ft. & ov., Chgo.	34.00
Reroll. rails, 5 ft. & ov., E. Pa.	34.00
Reroll. rails, 5 ft. & ov., St. L.	34.00 to 35.00
Reroll. rails, 5 ft. or over, Cleve.	32.00
Rerolling rails, long, Birming.	37.50 to 38.50
Locomotive tires, Chgo.	44.00 to 45.00
Locomotive tires, St. Louis	37.50 to 38.00